SEP 21 1936

News Issue

ELECTRICAL WORLD

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SEPTEMBER 19, 1936

★ CONFERENCE AUGURS NEW POWER ERA

★ BRITISH GRID ILLUSIONS DISPELLED

★ FOREIGN GOVERNMENTS CO-OPERATING

★ BRIEFS FILED IN HAND-PICKED CASE

★ VALIDITY THE ISSUE IN T.V.A. SUIT

Weekly Energy Output Figures – Personal News
Manufacturing and Markets – New Construction

ALL INDUSTRY IS TURNING ON THE HEAT

ALL across the country, manufacturers are turning on electric heat to improve their products, speed production, and reduce costs. Electric-furnace brazing, for example, is revolutionizing the production of small parts in automobiles, refrigerators, radios, cash registers, etc. Our best estimate indicates that this one application of electric heat will require 24,000,000 kilowatt-hours during 1936.

Electric-furnace brazing, a result of G-E research and a process developed and promoted primarily by General Electric, is an excellent example of G-E load building. With electric-furnace brazing, industrials are learning more about the cleanliness, the efficiency, the dependability, and the easy control of electric heat. This is helping to stimulate all the different uses of electric heat in industry — a load that even during depression years was increased, with General Electric equipment alone, by more than three quarters of a billion kilowatt-hours, representing new power revenue of nearly $14,000,000.

We repeat, all industry is turning on the heat — electric heat to operate more than a million kilowatts in General Electric industrial equipment. If you know how much of this load is on your lines, then you have a measure of one of the extra values you get from General Electric. For every investment you have made in General Electric equipment, we wish you would make your own estimate of value received, dollar for dollar, not only in apparatus, but also in research, in engineering, and in load building.

GENERAL ELECTRIC

News Issue

ELECTRICAL WORLD

VOLUME 106 ✦ SEPTEMBER 19, 1936 ✦ NUMBER 38

World Power Conference Augurs New Era in Power

All countries agree electric power is the agency which will revolutionize our standards of living and of productivity. Conference shows rest of the world encourages private initiative in expanding social benefits of electrical technology. No virtue seen in governmental interference, competition or persecution. Illusion that other countries are bureaucratically minded is wholly dispelled. Sessions afford admirable interchange and conciliation of national power policies.

Under the auspices of the Third World Power Conference about 2,500 leaders and experts from all parts of the world met in Washington. They presented 300 papers and an equal number of discussions. It was a Tower of Babel with a fount of wisdom.

This was an ambitious and unusual conference. It had a program focussed on the use of power and natural resources from the point of view of social good and economic advantages. Each paper was written to specification. Technical matters were subordinated to political, management and planning aspects of these national values. A quality attendance from abroad and from this country was had of business and political leaders occupied with these assets.

It was a tremendous affair. To those who had read no papers or who dropped into a session or two the reaction was "I don't know what it is all about." To those who read the papers in which they were interested and attended the accompanying discussions the reaction was "this is the finest meeting ever held in the world." This may be said: the papers and the discussions afford the richest treasure house of fact, policy, plan, organization and accomplishment ever gathered and gave a basis for many plans to advance the industry and to improve civilization.

But the feast was too abundant to be digested by a casual visitor or layman. The proof lies in the press reports sent out by the unaided correspondents. They succumbed to the political atmosphere and used one or two "out-of-line" incidents as the basis of session stories because of their inability to grasp the programs and interpret them.

Discussion is well rounded

This meeting, from the electrical industry point of view, developed a rounded treatment of power for each country by treating the whole subject in a series of parts. These consisted of:

(a) Statistics on power, power use and resources
(b) Organization of all forms of power enterprises
(c) Regulation of power enterprises
(d) Integration of power supply in all aspects
(e) National plans and policies in power.

Under statistics it was shown that this country, Canada and Great Britain only had complete statistics over a period, that international statistics need standardization and that nations are now trying to get complete statistics.

In the organization of power enterprises there is a wide variety of types. State owned, municipally owned, mixed governmental-private ownership, private ownership and co-operatives are found and several of these types of power enterprises are often found in a single country. But, only in this country does

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there seem to be a heated political debate and fight on between advocates of public and private ownership. All other countries seem to try to develop a rational power supply on a planned economic basis with little public interest and with little friction or competition between enterprises.

It should be noted, however, that the status of power enterprises, their history and their local conditions in other countries were different from those over here and that our present abundant use of inexpensive power and widespread power facilities is far in advance of most other nations.

This is quite evident in the papers dealing with utility regulation. Only in the past two or three years have national regulatory laws been passed in most countries. Enterprises were local undertakings by municipals or by private individuals operating under a local franchise. Municipal and franchise regulation thus took the place of our state regulation. But the new regulatory laws of most countries contemplate placing over this local regulation some national authority to see that a national and integrated power supply is built for each country. These encourage integration and economies and they control all enterprises whether private or municipal in a friendly and benevolent endeavor to expedite the power economy of each country.

Integration is a part of the basic plan of national regulation. It is thought desirable to have standardization, coordination and maximum economy in power production in regional or national areas and the state regulatory authorities are aiding this project. In most cases this regulation comes at the suggestion of and in co-operation with the power enterprises that exist and is not an imposed program.

Here again the status of integration is far in advance of that in other countries here in Canada and the United States. The United States has several grids and also integration in distribution, ownership and management. Some other countries are trying first to get integration in generation and transmission as a start to the ultimate plan.

Conference welcomed by Hull

The Third World Power Conference was set in motion by an official welcome by Secretary of State Cordull Hull, who took the opportunity to plead for application of engineering talent toward constructive peace rather than destructive conflict among the fifty nations represented. "Today," he said, "a disproportionate share of the skill and energy of scientists and statesmen alike is being devoted to the creation and organization of forces of destruction." He urged members of the conference to use their talents and their influence for peace. Dr. W. F. Durand, chairman of the American committee, had previously called power engineers the guardians of a trust which the conference deliberations reflected as a duty to discuss optimum conservation and utilization of our power resources. These resources, he said, hold the key to the future advancement of our civilization.

Canada, Mexico and Argentine joined the United States in the welcome and responses were registered by chairmen of the German, Polish, Belgian, Danish, Lithuanian and Italian delegations.

Speakers From Great Britain Dispel Illusions About Grid

Emphasis on trends was fixed by Chairman Gano Dunn in opening the discussion on the group of power resource papers. To clinch his request he quoted Ralph Waldo Emerson's adage, "When Nature has wanted something to happen, she overloaded the tendency in that direction." At the outset Ludwig Kallir of Austria conformed by showing that Austria's loss of her coal by the peace treaty had intensified her interest in alternative forms of power. Viscount Falmouth raised the British query about security against the loss of super-large generating units so common here. They had concentrated largely in the Isles on 3,000-r.p.m., 30,000-kw., 50-cycle units even in the later evolution of their grid. In reply later Walter S. Finlay said that multiplicity of interconnections in the "grids" long existing here had led to constant interchanges which compensated for occasional loss of the large units, usually without the consuming public ever being aware of the mishap.

Dr. Otto Schoene of Berlin advocated use of surplus and waste steam in drying of brown coal briquets and foresaw a saving of some 5 to 7 millions of tons of coal by intensive application to this process. J. M. Kennedy, president of the British I.E.E., saw some slight hope for tidal power, but emphasized the reliance on coal. As for the decrease in coal use by improved efficiencies, that would be offset by the impending stimulation of electrical utilization and its beneficent social and economic consequences would readily outweigh the relatively reduced use of coal.

When the British Grid was instituted the excess plant capacity had reached 83 per cent. It has already been reduced to 50 per cent and five years more would see it cut to 20 per cent, said Mr. Kennedy. The Central Electricity Board viewpoint was expressed by H. Quigley, who related that integration and control of power was more financial and capital than technical. They treat all stations in a group and pay somewhat less attention to thermal efficiencies than to details of fuel and operating costs when they select the stations most advantageous to run on load. In their studies they can hardly ignore the prospect of enhancement of load as is presaged by the present addition of 5,000 farms yearly by promotional activity of the utilities through extension of subordi-

WORLD POWER CONFERENCE DELEGATES ATTEND OPENING SESSION OF THE

nate links into rural territory. The British are following our T.V.A. with interest and anxiety. It looks to them as if headed somewhere, but they are not quite sure where. At least they look upon the electric power phases of T.V.A. as the dominant component of the program.

In addition to replying to Mr. Kennedy on the matter of large generators W. S. Finlay stressed the fact that the government should give respectful recognition to the voice of experience available here from an industry that over a half century has brought a system of energy dissemination under private auspices to a high state of perfection. In contradistinction, Lord Falmouth had mentioned the recent British survey recommendation that all private utilities be transferred to public operation within the coming 50 years.

Following this session the audience moved to the Smithsonian Institution, where Dr. Abbott had his solar heat collector on exhibition. Alcoa parabolic reflectors of 36 square feet concentrate the sun's rays on tubes containing Aroclor. The kilowatt of solar energy develops about one-half horsepower at the motor. British comment heard was that they were more in need of a fog motor. Other interest was more sympathetic, especially after it was announced that reflectors covering an area as large as Lake Mead behind Boulder Dam could generate as many kilowatts on a sunny day as the water passing through the Boulder generators.

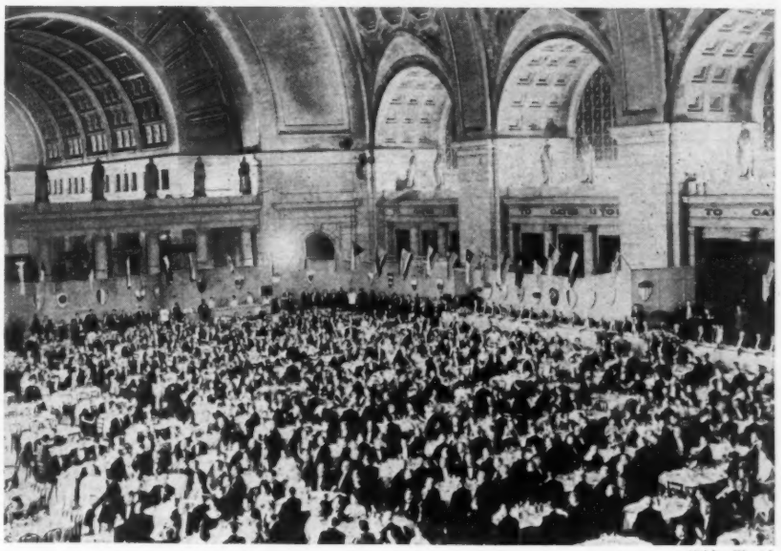
Grid Not Imposed

A discussion on organization of electric utilities with J. G. Holtzclaw as chairman brought out interesting comments. Representatives of several countries explained the development of their utility organizations, but none recorded any controversy between private and public ownership or a policy of government dictation or confiscation.

Dr. Charles Merz of Great Britain, for example, who was a leader in its development and installation, said "the Grid was not imposed upon the country and upon the industry by act of Parliament." He pointed out that the legal and traditional background of utilities and their ownerships in Great Britain made the industry ask for the grid legislation as the easy way to bring about results that all thought desirable. He said conditions in the United States do not call for the imposition of a grid by legislation. Integration and interconnection already exist on a scale that further improvements in the United States can best come by the exercise of initiative by the leaders of the industry itself.

There are definite physical and economic limits to consolidation and integration of power supply in the opinion of Michel Deutsch. All the world admires the electrical job done in the United States, and in his opinion the holding company has had little effect if any on rates. He believed the United States is too large and too well developed electrically to permit or to make advisable a single integrated system. Eduardo Salazar of Peru said the risk of the business was such that it was advisable to leave it to private enterprise. Edmond Reux of France said the electrical industry there was essentially the result of private enterprise. In fact, this session was about as complete and cosmopolitan a testimonial from non-American sources to private enterprise as could be conceived.

POWER DELEGATES DINE IN UNION STATION



—*Wide World*

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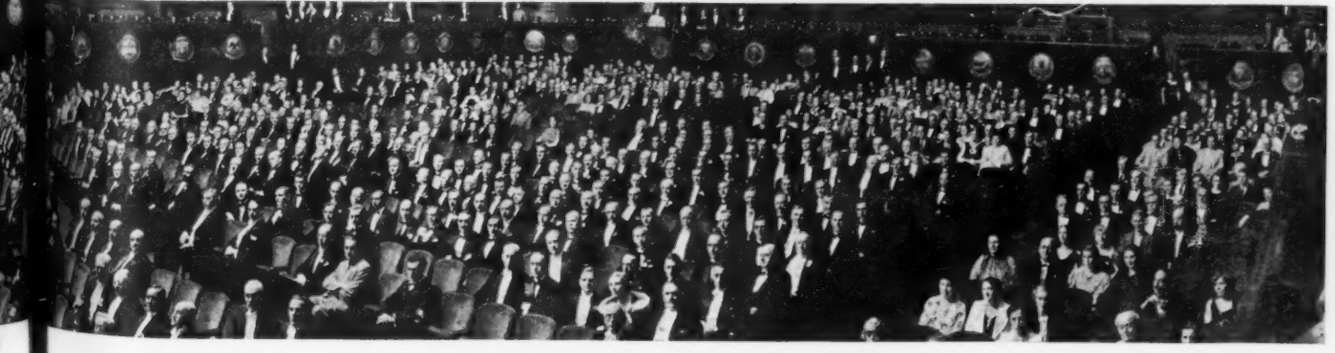
Foreign Utility Regulation

Europe is just beginning to regulate utilities. The motivation is a political program to assure maximum national economy in the development and use of gas, oil, water and power resources. Each nation has started with the *status quo* and advanced appreciably with its program, but the detail organizations and methods are modified by local national conditions. In general regulation is endeavoring to be constructively helpful rather than punitive. In a few instances, however, regulation has tended to fix a status rather than to let power supply respond to economic facts. It is natural that political power be exercised to sustain a political program, even though this be uneconomic.

It should be noted that European util-

LD POWER CONFERENCE ON MONDAY EVENING, SEPTEMBER 7th, 1936



Harris & Ewing

WORLD POWER CONFEREES VISIT WHITE HOUSE

Group of delegates to Power Conference shown outside White House after calling upon President Roosevelt

ities grew largely as small local and municipal enterprises whose franchises fixed their territory and maximum rates. These enterprises were municipal or co-operative, industrial plants and private utilities, and no appreciable endeavor was made to get co-ordination or integration until recently. But within the past few years regulation by the state has been instituted in most of the countries. This is designed to get maximum economy and maximum use and yet not restrict initiative in management or operation.

Great Britain makes no distinction between the 252 private utilities and the 379 public utilities—they are subject to the same regulation. Electricity commissioners fix basic regulations and safety provisions. The Minister of Transport fixes maximum prices and grants permission to build lines. The Central Electricity Board is set up to supply wholesale power to private and public utilities, and to do this has built the British Grid. This board has been integrating and standardizing the supply systems, but is definitely limited in its enforcement features. It can shut down inefficient plants and compel the use of efficient plants; it can build a grid transmission system. But it cannot force a local utility to buy its power unless its price is less than the production cost of the local utility. It has no power to integrate and consolidate the large group of private and municipal utilities.

France embarked upon national regulation in 1935. The government makes edicts as to concessions and fixes maximum prices. It assesses urban utilities to get a fund to aid rural development. It set up an advisory committee of 75 to advise the Minister of Public Service on power questions.

And here is an interesting thing. Regulation of thermal stations was set up because they had economic advantages over existing and prospective hydro and transmission systems and it was desired to overcome this economic inequality. No new thermal plants can be built without permission. Taxes were placed on thermal station output, while hydro systems were relieved of this burden.

One sound regulation in France is the limitation of utility taxation to 4 per cent of gross as a maximum and utilities are exempt from general industrial taxes and the 2 per cent sales tax, except that this is applied to output of thermal plants.

BACK OF IT ALL

Harris & Ewing

Back of all the preparations for the World Power Conference was O. C. Merrill, director

State aid is given to hydro and rural developments but not to steam plants. State aid is given to high-voltage interconnections and lines. This aid takes the form of annual payments over 30 years and are limited to 2 per cent of the initial cost except in the case of rural projects.

Germany has a National Corporation of Energy Economy, established in 1934. This has an electrical section with 16,000 establishments as members. Next, in 1935, the Energy Economy Act was passed. This places all utilities under the control of the state and enables the Minister of Economy to adjust rates.

Norway has had little regulation except laws as to the acquisition of waterfalls and mines and the flow of water. Most of the water power is in private hands. State grants are given to each utility with certain general limitations.

Hungary had no regulation until 1931. Now all new utilities must get a state concession for generation, transmission and distribution. All utilities are private enterprises, but can be taken over after 30 years. The government has control of rate making for new utilities and can force integration.

Poland also has state control of the authorization of new utilities and concessions are granted to fit into a national power economy conception. A license tax, a turn-over tax, an income tax on net income and a net of 8 per cent on lighting revenue gives some idea of the utility tax burden in Poland.

Conclusions to be made from the foreign papers on regulation are threefold: (1) It is of comparatively recent origin; (2) it, in general, tries to develop integration and co-ordination only and affects operating managements but little; (3) it takes variable forms and is in an embryonic stage as compared to regulation in this country.

Foreign Governments Regulate, Do Not Repress Utility Companies

Londoner asks politicians be kept away from utility industry in reply to New Yorker's tirade. Nation's guests refute claims of U. S. office holders.

Whoever has had the opinion that Europe is all for government ownership of utilities and takes a repressive attitude toward those which are under private management could hardly avoid revising his opinion after hearing the discussions on regulation at the Wednesday morning session of the World Power Conference. One after another the speakers emphasized the fact that publicly owned utilities are accorded no preferential treatment by government, and on the contrary are required to behave like private enterprises as to taxes, accounting and performance. Another illusion dispelled was that the British Grid is run by a governmental bureaucracy like any one of the multitude we have concocted here. Minshall of Great Britain made it perfectly clear that it was suggested by the industry, is run by the industry, has not the remotest political connection, rides entirely on private capital and has not even a governmental guarantee. Nor was its objective nearly so much an attractive rate reduction as an avoidance of waste of investment in inefficiently small and utterly unco-ordinated plants.

Viscount Falmouth drew from his country's experience the lesson that utility legislation should always reach as far into the future as possible. Even with forty years' experience with gas, British legislation on electric utilities set up a chaotic pattern, which is only now beginning to be corrected. Nils Malm of Sweden said the private utilities there were encouraged to live and live well and whatever competition there was was fair. The state is engaged in bulk power activities and the private companies in distribution.

Germany, according to Carl Krecke, is confronted with the question whether regulation does not verge inevitably into control of such scope as to fix the type and form of energy. Consideration is being given to a program which would leave the heat field to gas and the light and power field to electricity. Otherwise the view is that competition should not be suppressed, because it is indispensable to the interest of public and investor.

Minshall added to his clarifying remarks about the grid the assertion that public operation in Britain carries no yardsticks, that municipal and private rates are practically equal, that municipal competition is no factor in regulation of private operation, and that the municipal ownership agitation is in penumbra in general in the Isles.

A gracious testimonial to the efficacy of consolidations like those we have was accorded by Launay of France. There the trend is toward decree law which has set up a council to encourage amalgamation with financial aid of government to offset undue loss of private capital in the process.

At this juncture fiery La Guardia's Davidson, former New York municipal utility commissioner, put in a bombastic tirade which condemned the ineffectiveness of regulation by the state and exploitation by the banker. To get the discussion back to its plane of dignity and sincerity, J. C. Dalton, a municipal official of London simply said "Let us by all means in our power keep the politicians away from this industry of ours." One must recognize that spirit on the part of several other governmental officials and operators to understand why private operation and public operation live in harmony and effectiveness abroad without the antagonism that rules here. It is manifestly a question of professional integrity vs. political chicanery and we seem to have a monopoly on the latter.

No better contrast is needed in support of this allegation than to pit K. S. Wingfield's (PWA director) remarks against those, say, of Dalton. Wingfield, dispenser of funds to subsidize municipal competition took the occasion to put in a partisan attack on private operation and of regulation. Without proof he asserted that regulation had been perverted to the cause of private capital, too much devoted to insuring profitability of the enterprise.

In his closure the chairman, C. J. Goodnough of the Pennsylvania commission, reminded the delegates that commissions are likewise delegates and can only exercise powers that are delegated to them by the legislatures. He said calmly that he believed that regulation here had been honestly and effectively administered. If it is discarded the only alternative is public ownership or wasteful competition.

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Little Advocacy of Public Operation

One nation after another made it clear that in their philosophy and practice, there was little difference between their public and private utilities as to rates, regulation, financing, or efficiency of operation. For Great Britain, this was attributed by E. J. Fottrell to the characteristic of both enterprises that the professional prestige of engineers dominates the management. In Switzerland, where the municipalities have full power of local regulation, there is considerable

BETWEEN THE ACTS AT POWER CONFERENCE

Harris & Ewing

James F. Fogerty (left), president, North American Company, discusses World Power Conference developments with Floyd L. Carlisle, board chairman of Consolidated Edison

resemblance even to the exercise of the profit motive. Private companies, in the opinion of Jean Aubert, have given France satisfactory service and regulation of them came at their own volition and not by persuasion. The State has intervened only in rural electrification. There is no critical political attitude toward the power companies.

Out of Italy came the assertion that the national government treats private and municipal utilities identically as to taxation. Nor in Austria are there any partialities shown to the public enterprises; E. Schobert said he advocated public electric works if only to disprove the belief that there is any inherent advantage in them or that they afford a gold mine of economies.

The Austrian government has interfered but little because the municipalities have well carried out their evolved function of distributors and the private companies have functioned satisfactorily as generators and suppliers of bulk quantities. He said that government operation competitively is successful only when the management follows a profit economy.

Reverting to Great Britain, where practically all the large places except London are municipally served, there is no active public discussion of the relative merits of public and private service. They are treated alike as to taxes and both wail much about their severity (at 12-14% of gross). The municipals redeem their mortgages well within the economic life of the property, said H. C. Lamb of Manchester.

At this juncture, another of Mayor LaGuardia's emissaries injected himself into the otherwise fruitful proceedings. This time Tenement House Commissioner Post drove for dirt cheap energy for his wards who have to budget in terms of pennies. He asserted, as had Davidson in an earlier session, that the threat of public competition was the only effective way of crushing private rates. Edwin Seddon of Edinburgh said he believed in government ownership, but unlike Lamb, did not believe it inevitable, at least not in Scotland. He too repeated the idea that there is even the slightest political interference or repression in the British Isles.

K. Sewall Wingfield of our P.W.A. popped up on the discussion list with an out and out biased presentation of the punitive philosophy of the bureaucrats that too much was vicious in the local regulation of utilities and that recovery money should be the holy corrective. This academically-minded crusader gloated over the fact that in municipal elections 82% of the proposals for revenue bonds were favorably voted and that investors seemed to like them. This, in his opinion, justified use of government millions to crack the prevailing general state requirements of mortgage bonds.

Rationalization of Distribution

Considerable difference in interpreting the significance of the assigned topic, rationalization of distribution, was evidenced in the discussion at this session. At the outset Chairman L. H. Egan (of the St. Louis utility) emphasized the fact that cost of generation is a small component of the price of delivered energy. Several of the discussers talked about rates and load cultivation without focussing on the distribution cost factor in the rates. Edy Velander said the Swedish engineers question our reliance on so low a distribution voltage as 110 and he also wondered why we could not imitate them by reading and billing only quarterly instead of monthly. Germany, according to Dr. Carl Koerfer, is trying to simplify voltage stages from plant to user and in other ways to cut delivered costs.

Three strong points were made by Philip Sporn (American Gas & Electric Co.); (1) Cost of production must be reduced further, (2) cost of urban distribution can possibly be lowered by standardization, simplification and improved methods of regulation and use of materials, (3) but distribution costs show signs of increase despite engineering progress. The latter is occasioned by demand for better voltage regulation and frequency control as well as drives for underground construction.

BASIC PRINCIPLES OF RATIONAL DISTRIBUTION

Michel Deutsch of Belgium contributed an unusually terse exposition of the principles which are essential to proper operation of any utility striving to render service on a rational basis—

An undertaking for the production or distribution of electric energy requires like any other to be run on business lines. The rules of sound commercial operation comprise the principle that an undertaking shall refrain from any expenditure that will not yield a reasonable return, whether it be capital outlay or operating expenses; on the other hand, it must endeavor to supply its customers at the lowest possible price and in the manner best suited to their needs and tastes so as to expand its sales and find in this expansion a means of reducing the cost per unit of its supplies and of making increased profits.

In order that a concession-holder may be in a position to apply these principles, it behooves that his rights as well as his obligations be carefully defined in the deed of concession.

Considering that distributors are more than anyone interested in fixing their rates so as to promote a constant increase in demand, the authorities should aim at creating such conditions as will render it possible for the undertaking to accomplish its essential object which is to meet every demand at any moment.

The capital outlay in an electric utility is always very large in proportion to the annual turnover. Even with a strong demand at comparatively high rates the gross annual receipts seldom exceed 20% of the capital involved.

The large amounts of capital that must be invested in the original plant and its continuous extension or improvement cannot be provided unless the undertaking is reasonably assured of financial stability. So-called political or government yard-sticks do seriously affect financial stability.

A satisfactory remuneration cannot be earned with a schedule of the lowest possible rates if the undertaking is burdened with excessive taxation.

Coordination of several undertakings under one management provides a means of reducing operating costs to a notable degree.

When adequate legislation, such as exists in Belgium and other countries, suffices to prevent a monopoly being abused, every electric utility (or combined electric and gas utility) should be granted an exclusive right to supply a given district.

Regular utilization of the plant, i.e., a good load chart, can considerably reduce the average cost per kilowatt-hour. Improvements in this direction can be brought about by diversified rates varying according to the characteristics of each customer's demand. Badly calculated rates can easily jeopardize the stability of an undertaking.

Intelligent advertising and load building can multiply and increase the uses of electricity.

It is very necessary to enlighten the public on the facilities it can derive from the use of electric appliances, and to assist it in the purchase of such appliances.

Greater still is the need to make the public understand what conditions of operation enable a distributor to reduce his costs and consequently his selling prices per unit without prejudice to the legitimate interests of the thousands of investors who have placed their savings in electric utilities.

These fundamental principles must be obeyed by both private and public undertakings or ruin follows.

There is no reason to believe that progress in the near future will be revolutionary but we have every reason to believe that gradual progress will eventually give us much lower costs than we have at the present time.

Application, however, of the same engineering methods as have been employed for decades in urban practice has reduced the cost of rural lines to a point where at present we are really on a very sound basis and where again spectacular further reductions are not visible on the horizon. But again there is no reason to believe that slow but gradual progress will not continue to be made in the problem.

Appliances, such as refrigerators, for example, which have short but frequent periods of operation, increase usage and demand but at the same time improve load factor and diversity very considerably, and thus are very effective in reducing the unit cost of distribution.

It is to be remembered also that mere increased usage without corresponding improvement in load factor increases consumer demand and cost of service.

There is the danger that even if an attempt were made, costly as that attempt would be, to allocate accurately the costs of distribution to different classes, it would result in many cases in a failure to develop the market of one or another class in any early stage of a new application development when some outside help is needed. That would actually result in the long run in a total higher cost of electric energy to all classes of consumers. And that is something alien to the spirit and the idea of rational distribution of electric energy.

FAMED POWER FIGURES

Harris & Ewing

W. Borquist, chief director of the Royal Board of Waterfalls of Sweden, and Owen D. Young, chairman of the board, General Electric Company, at World Power Conference banquet

Foreign Power Supply Systems Show Little Present Integration

Most nations have adopted a political program for national power supply, but the actual carrying out of such a program in general has been limited to a few countries. The subject is comparatively new and most of the plans are paper plans. The general idea is to have utilities and power facilities co-ordinated from the point of view of the generating and transmitting systems. Only an embryonic endeavor is noted toward including distribution systems, and this in Great Britain only.

Only in this country and Canada has a rational development of integrated systems occurred. Under the impetus of private enterprise the steady and economic growth of power supply brought the final result of the modern integrated and interconnected systems that exist over here today.

In other countries, where the organization and controlling agencies of utilities took the form of state, municipal and private concessions for relatively small areas, there was difficulty in purchasing or consolidating properties inherent and little endeavor was made in this direction until recent years.

Norway took care to conserve her water power under a state ownership and private lease system, but went no further until recently. A plan was devised in 1922 to care for integration by giving state control of transmission, but this has not been carried out.

France aids interconnection

France is in the midst of trying to get a national power supply through state control of generation and transmission. All lines and utility concessions are now under the state only. The state loans money to build interconnecting lines that fit into the national plan. These loans are in the form of 30-year annuities and about 1,200 km. of line has been built under the program. Total annual state loans are about 6,000,000 francs. The total interconnecting transmission network in France has cost 1,500,000,000 francs to date.

Private enterprise carried out the projects. Companies were organized for each trunk line or group of regional lines. These companies are formed usually from the local distributors in a region and contribute to the fund of the regional company in proportion to their estimate of their use of the facilities. Major industrial plants also join this kind of enterprise. There are 38 of these transmission companies in France. They finance and operate the lines and fix rates under the federal concessions.

No definite national plan is announced for France. It is a regional development. And, as has been pointed out already, local thermal plants were found more economical, so that both taxation and permission to build new thermal plants were resorted to in support of the transmission and hydro projects.

No definite power exists to get integration in Hungary. There is a vague plan and there is state control over new concessions, but little has been accomplished to date.

Norway has regional integration that has developed naturally over a period of years—variable water flow and a predominance of hydro power made interconnections logical. An informal association of utilities is the agency used, with a common load dispatcher. Integration is a matter of joint operation and not of common ownership.

Reich for integration

An interesting development in Germany to conform to the idea of national power economy is to force common ownership of electric and gas utilities in a given area. The plea is that the community will benefit if competition is removed. We may contrast this with the political idea here—to divorce ownership so as to increase competition and thereby benefit the community.

Germany also has built up regional integration of utilities on a natural basis and the government is now on top of the situation to further this activity.

Strikingly different points of view are found in the American papers dealing with integration. All agree on the idea but differ as to method. Basil Manly advocates power pooling in each region, using private, federal and municipal systems under federal control, dictation and regulation. He believes this the best plan to handle the large blocks of hydro power developed by the federal projects. Apparently the idea is to have the federal government in full control, although not the owner of all utilities, to develop regional power supply.

George N. Tidd objects to the wide grants of power already given the government and cited cases to prove that integration had occurred and was occurring under private enterprise wherever and whenever this was advisable and economical. He showed how several regional systems had already grown and how they were operated on an integrated basis. He doubted the need or the competency of a federal authority to handle regional pools and pointed out the great differences between operations here and in Great Britain.

George Soule gave a thesis on the social

value of power and advocated the introduction of social values into utility accounting. Apparently weight should be given to electricity use as a social asset, even though not justified on an economic basis. The inference was that the federal government should aid this development and control the situation in large measure.

W. S. Finlay, Jr., gave a splendid paper on the general topic of conservation and integration and developed the background of facts and policies that have enabled private enterprise to go ahead with integration and conservation in this country on a scale far larger than has occurred elsewhere.

Integration of Utilities

Regional and national integration of utilities was an interesting subject to discuss. Percy H. Thomas advocated a regional co-ordination plan for generation and transmission with the government in charge. Messrs. Hobson of Great Britain, Wolf of Germany and others told of the plans and accomplishments in their respective countries.

Philip Sporn pointed out the integration already made in the United States and the important part the holding company played in this program. He stressed the great technological changes and economic changes to be expected in a growing and expanding industry. Today, for example, all benefits of an interconnection may be had from a single tie, many other interconnections have no diversity in loads, the economic distance for power transmission is decreasing, for example, on the American Gas and Electric system it is now less than 60 miles. Each interconnection is a special study, not a foregone conclusion.

ICKES BELIEVES IN POWER

Cheap power means a wider use of power and a wider use in its turn means a higher standard of living and an advancing civilization. Therefore, it seems to me to be one of the major problems of our statesmanship to see to it that power generated by private enterprise is made available at the cheapest possible rates consistent with a return of a reasonable profit to the capital that is actually invested in its production and distribution. I do not pretend to be acquainted fully with what other nations have done to make this civilizing influence available at prices within the means of people to buy but I am glad to be able to say that a great stride in the direction of cheaper power has been made in the United States during the Administration of President Roosevelt.—Abstract of address at THIRD WORLD POWER CONFERENCE.

Two Schools of Thought Exist On National Power Policies

In the final discussion of national power policies two schools of thought were presented. One believed in state ownership of generation and transmission and municipal ownership of local distribution agencies. A more numerous group agreed to a combination or mixed set-up whereby private, state and municipal ownership existed side by side as in the past. Still others came out strongly for private ownership and regulation. Each case was presented as a factual and logical brief based upon conditions in the respective countries. Incidentally, the U.S.S.R. presented a splendid record of growth in the past 15 years and now stands third in power output in the world.

The only positive generalizations that can be made are:

1. Each nation has adopted as a political program for social good and economic advancement a plan or plans to develop power, to distribute it widely and to conserve national resources.

2. In developing this plan each one is building upon what exists and in fair and friendly co-operation with existing enterprises in taking a constructive and helpful attitude toward them.

3. Clearly recognized was the fact that a power policy in any country should encourage power enterprises to improve their operations and extend and intensify their services.

Heavy tax burdens, stifling regulations, non-profitable returns and unfair competition were some of the things mentioned as detrimental to the growth of the national power supply.

4. A clear picture was presented to show that the entire world is now going through a power revolution that is as potent to change civilization as did the industrial revolution.

National Power Policies

Electricity with its divisibility, flexibility and transportability is revolutionizing things. The decentralization of industry, the rise of new manufacturing nations to compete with older ones, the elimination of the necessity for factories to locate largely in cities—these are evident.

And more than this is the use of power and machinery in its effect upon labor, the ardent desire of the farmer and home owner to have electricity. All

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Senator Leon Perrier, president of the Superior Council of Electricity and chairman of the French delegation to the Conference shown with Hon. Harold L. Ickes of Public Works Administration

these are social and economic problems that are international and not national in their significance.

At the final session on National Power Policies several splendid discussions were given. They were mostly on a high plane, and L. L. Loriven of Geneva in particular showed that a national policy on power was not complete unless it gaged the effects it will bring about upon international labor and international trade.

M. F. Horn of Belgium gave a splendid summary of the mutual obligations and duties of the state and of the utility enterprises to work out a development of the highest type for a country.

E. F. Scattergood and W. S. Petersen of the Bureau of Power and Light challonged some of the data and conclusions in the paper of Floyd L. Carlisle.

In his closing discussion Mr. Carlisle said he had spent months and used every precaution to develop the facts and figures in his paper, but would be the first to change them if convinced they were incorrect. He said it was no accident that 94 per cent of the power business of the United States was under private enterprise. Today, in his opinion, there is nothing that the private utility industry will not do to co-operate with government provided this is founded upon sound economics and is for the public good.

Power in the Planning Picture

Interesting data were given by Wilhelm Wechman of Germany in discussing railroad electrification as a component of conservation. He cited the advantage of using at the power plants grades of coal which could not be burned efficiently in locomotives.

Under electrified operation he indicated an overall thermal-mechanical efficiency (plant boilers to locomotive couplings) of 14.1 per cent. Normal values for modern steam locomotives in running operation are 6.7 to 8.3 per cent ignoring roundhouse readiness and idling on the rails. Taking these factors into account the maximum overall efficiency of modern steam locomotive is apparently not over 5 per cent.

In Italy a new commission is studying the feasibility of a 220-kv. line to supercede the present 132-kv. backbone line connecting the northern hydro with the industrial areas to the south. All their national planning, according to Marco Semenza, is focussed on water power, and the major problem is the concentration of all of it on the northern frontier. Charles La Malegarie, Paris municipal, enumerated several well-known alternatives to steam and hydro power, and asserted that agricultural alcohol as a fuel does not promise much without sustained governmental subsidy. He added the suggestion of deriving heat from the incineration of city waste. T. W. Norcross of our own forestry service gave a notable exposition of a sound, technical, forward-looking administration of a program for conservation of natural resources. It could well form a pattern for bureaucracies to follow whenever they may wish to deal impartially with the national forces of planned economy. A unique note was struck later by F. H. Van Iterson of Holland, who argued against utilization of home resources when they can be bought more cheaply from outside areas because of competitive efforts to consolidate world markets. Anyhow he foresees an ever-increasing release of energy resources and it is therefore detrimental to the present civilization to be parsimonious about present available stores of energy.

Rural Electrification Shown Advancing All Over the World

Digest of European practice shows active promotion with or without government aid — Cooperatives common in Teutonic area

Nationalistic trends all over the world have placed emphasis upon self-sufficiency and, consequently, upon making rural living more attractive. The past decade has seen unusual enlivenment of rural electrification and, in the accomplishment, many countries have surpassed the English speaking territory. High percentages of rural saturation are reported from Germany (80% of farms), Netherlands (98% of all population), Sweden (65% of arable area), Hungary (95% of all buildings in some districts), Belgium (only 0.17% of total population unserved), Switzerland (98% of all houses). Here in this country, three million farms are reported still unserved.

Significant consumption data are meager, and the indexes vary widely in base for such figures as were reported in the rural electrification papers of the World Power Conference. Survey of 37,251 German farms revealed an average annual use of 300 kw. hrs. (spread 150-3,000) with an index figure of 12 kw.-hr. per acre per year and 87 hours use of connected load per year. Electric motors constitute 93 per cent of all power drives. The maximum load in agricultural districts falls in November and December. The French report indicates 30 kw.-hrs. per rural inhabitant. In the Chester project, Great Britain has found farm use of 4,435 to 9,256 kw.-hrs. annually. Per hectare, Sweden reports 40-45 kw.-hrs. and Denmark 17. Per farm, the Austrian figure is between 135 and 410 kw.-hrs. These figures can be contrasted with the Eastern U. S. average of 872 kw.-hrs. for 1935; west of the 100th meridian, the per farm average was 5,673. On an average basis for all French rural distribution systems, the people per kilometer of line number 36, per transformer 165 and per kva. of transformer capacity 19.

Rates vary much in structure, but it is

NORTH AND SOUTH AMERICAN TÊTE-À-TÊTE

Harris & Ewing

Senor Don Enrique Gongora, chief of irrigation research for Lima, Peru, with M. L. Cooke, Rural Electrification Administrator

apparently becoming recognized that the form of structure carries the means of rendering rural electrification financially sound. Two-part rates are prevalent in Great Britain; the fixed charge per quarter varies from 2.5 to 8 per cent of the net annual rent value of the premises as given for taxing purposes. Other forms apply 10 to 20 shillings per 1,000 sq.ft. of floor space or 3 to 4 shillings per room. About 40% of rural premises have a 1 cent energy rate or lower and only 8% are above 2 cents. All but 5% of the 1935 rural energy came off the grid. Farmers either pay for part or all the line or guarantee a gross annual bill equal to one fifth the cost of the line.

Sweden has energy charges varying between 4 and 8 öre; Germany favors two part structures with fixed charges based on size of farm or head of cattle. Energy rates range from 8 to 20 pfennig per kw.-hr., night use runs down to 3.5 pfennig. In this country, the average revenues from farm service are reported to be 5.57 cents east of the 100th meridian and 1.78 cents west of it.

Extensions are made in Switzerland generally on a 1:5 ratio revenue to cost of line with readjustment when there are newcomers. In the Netherlands, a minimum guarantee is also common although there is a tendency for the utility to assume development-period losses out of funds created by dividend restriction of provincially-controlled corporations. As for ownership, the cooperative method is characteristic of the mid- and north-European countries; in Denmark, it has obviated intervention by the central government; it is yielding to public ownership in Germany; in Sweden, there is harmony between government, utilities and the cooperatives, and there are similar situations in Switzerland, Austria and Hungary.

Forms of Government Aid

Loans, technical assistance and direct subsidy are common features of governmental aid. France has given state grants of 30 to 50 per cent and political subdivisions often raise this to two-thirds. In Czechoslovakia, some 4,355 communities have been served through grants up to 75 per cent of cost. Sweden avoids direct subsidies, but offers loans at low interest and sums are provided for affording consulting services.

Promotion has taken various forms. Demonstration farms have been resorted to in England, Germany, and Sweden. Studies, especially in England, showed savings to the farmer from electrification. Farmers' electrical conferences and traveling exhibits are other features of the British program. In Sweden, a special quarterly review, published by the Association for Rational Use of Electricity, reaches a circulation of 20,000, largely through utility distribution.

World Power Data

For the first time the nations of the world were asked to supply data on natural resources and power on a comparable basis. Some fifteen countries did this in more or less complete form. But only two or three have available the detailed and complete statistics compiled in this country.

Data are given on (a) resources of oil, gas, coal, water power, (b) production of oil, gas, coal, hydro power and steam power, and (c) consumption of coal, oil, gas and power, with some measure of classification as to uses.

It is notable that France, Germany and Great Britain rely almost entirely on thermal power. But Russia, Italy, Switzerland, Norway and Sweden rely largely on hydro power. This fact, back in 1926, developed into proposals for an enormous European grid system to tie together thermal and hydro stations to get maximum European power economy.

But this idea does not appear in the World Power conference papers today. The reasons are twofold. One is the development of the nationalistic idea in each country, with consequent selfishness, and the second follows this political change; *i.e.*, each country puts prohibitive taxes on imported or exported power. The European grid idea is politically impossible today.

Power production in Europe is based largely upon 1934 data. In comparison to the United States power production of nearly 100,000,000,000 kw.-hr. per year it is interesting to note the production of some of these European nations. For example, Hungary, 808,000,000 kw.-hr.; Norway, 2,910,000,000 kw.-hr.; Poland, 1,666,900,000 kw.-hr.; Czechoslovakia, 2,093,163,000 kw.-hr.; Great Britain, 13,029,000,000 kw.-hr.; Germany, 17,430,000,000 kw.-hr.; France, 16,500,000,000 kw.-hr. Undoubtedly the production of power in the United States far exceeds that produced in all of Europe.

Relative to area and loads, there are far more utilities in European countries than here.

Measured by resources, use of power, completeness of statistics and definition of statistics the United States and Canada are far in advance of other nations.

Electrical Utilities in Great Britain

Percentage Allocation of Finances 1932-33

	Capital	Revenue	Expenses	Surplus
Capital	100	.....	.....	.....
Revenue, total	15.71	100	.....	.....
Operating Expense				
Generation	2.84	18.05	38.33	.....
Distribution	1.09	6.96	14.79	.....
Management	1.42	9.04	19.19	.....
Rates	1.11	7.03	14.92	.....
Other	0.94	6.01	12.77	.....
Total	7.4	47.09	100.00	.....
Surplus				
Interest and dividends	3.67	23.36	49.50	44.15
Income tax	0.33	2.12	4.50	4.01
Depreciation & S. F.	4.03	25.66	54.50	48.50
Other	0.19	1.22	2.60	2.30
Balance	0.09	0.55	1.16	1.04
Gross	8.31	52.91	112.26	100.00

CARLISLE STANDS ON LAWS

Our present machine age does not, of course, direct itself. It functions in accord with certain fundamental laws. As there are constant and unchanging moral laws, so also there are unvarying economic laws. One of the most important of these is that every enterprise, whether governmental or private, must pay its own way, must stand on its own feet. Except for great emergencies and for short periods, subsidized business cannot endure.—Excerpt from address THIRD WORLD POWER CONFERENCE.

"—ADD TO ACHIEVEMENTS ALREADY GREAT"

One who considers the matter with forthright vision cannot convince himself that public policy for promotion of availability of electric energy can really harm the electric industry that exists today. It would give opportunity for that industry to add to achievements already great. The more integrated its sources of energy, the less it would require of excess capacity and the lower would be its costs. The broader the base of consumers of a product that is now classed as a necessity, the lower would be its costs and the greater its stability.—PRESIDENT ROOSEVELT, WORLD POWER CONFERENCE.

Gleanings at the Conference

Delegates comment, in informal interviews, on power developments in their respective countries.

In Brazil a reclamation and irrigation project costing about $47,000,000 is now well under way. Several dams have already been completed but it will require 10 years to complete the whole development. The new Brazilian constitution provides that 4 per cent of taxes not set aside for specific purposes shall be used in carrying out the project.

The government-owned Central of Brazil Railway is being electrified and other railroads of the country are planning to electrify parts of their systems within the next few years.

The Netherlands

Increased use of oil as fuel in the power plants of Holland will be one of the outstanding changes of the near future, it is predicted. Costs of production are practically the same at all plants. Plenty of cooling water is available throughout the country. Fuel costs are the same and there are no great differences in plant efficiency. For this reason there has been no urgent reason for interconnection. Some tying together of plants is expected however to increase the factor of reliability. Water heating and cooking offer the best prospects for load building. In the province of North Holland all farms have been electrified; in Gelderland 75 per cent.

Holland will probably begin installing a 150,000-volt underground cable between Rotterdam and The Hague early next year, at a cost, including transformer stations, of $1,500,000.

Argentina

Any appreciable increase in power output in Argentina will come about slowly. At present the country is concerned mostly with encouraging new industries to locate in Argentina and any great increase in the use of power will depend upon the success of that effort. The country depends almost entirely on steam power as hydro-electric developments are few. Only five per cent of consumption last year was generated by hydro-electric plants.

The total output last year amounted to 1.800,000,000 kw.-hr. and it is estimated that this will be increased from five to eight per cent this year.

Peru

Reservoir construction that will conserve enough of the abundant water supply of the summer for use during the winter is the chief problem of Lima and Western Peru. When snow melts in the high mountains the water supply exceeds that of winter by a thousand times. Normal stream flow in winter is insufficient to supply power and irrigation needs. A new 68,000 hp. hydro project is now under construction to augment power needs in Lima. At present the steam plant intended for use in emergencies only is being used continuously to supplement existing hydro output.

Chile

Lack of private capital in Chile probably means that power development during the next few years, at least, will have to be done by the government. While it would be better for all concerned were power development kept in private hands, such development in Chile is not likely to appeal to foreign investors. However, Chile has developed a leasing system that has worked well with the railroads, and the government would probably be willing to sell power at the switchboard to private distributing companies.

The Santiago area must have additional power soon. The logical development would be the adding of additional units on the Maipo River where 120,000 hp. already has been developed. An additional 100,000 hp. can be obtained on the same river. Additional power also is available on the nearby Cachapoal river. Chile must rely largely on hydro power. Domestic coal supplies are inadequate.

Ecuador

Construction of a municipal plant in Quito means that enough new capacity is being brought in to take care of probable needs for some years to come. As demand grows abundant hydro power can be developed near at hand. The needs of the extensive plateau, on which Quito is situated will be met by developing waterpower. Coal and oil must be imported. Transportation to the 10,000-foot plateau is expensive. Plants on the coast will continue to use steam power, it is predicted, as the cost of fuel oil and coal is low enough there to make for cheaper power than could be transmitted from a distant hydro plant.

Austria

Austria expects to expand its railroad electrification program, members of the delegation from that country declare. Main lines of most of the railways already are electrified.

Only 20 per cent of the waterpower resources of the country, which aggregate 1,000,000 horsepower, has been developed. Several new plants must be constructed in the next decade. All power produced in Austria is generated by water. An increase in consumption of about 7 per cent is expected next year.

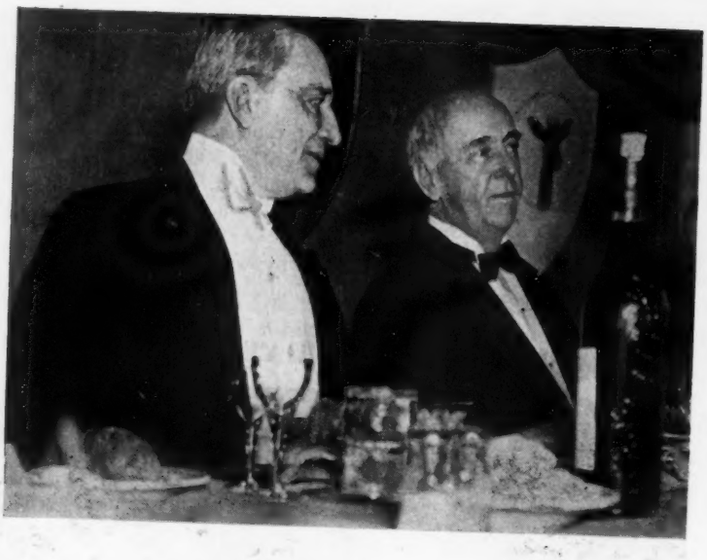
TWO PRESIDENTS CHAT AT CONFERENCE

Harris & Ewing

President of the Third World Power Conference is Herr Julius Dorpmueller (left), and at the right, Frank R. Lillie, president, National Academy of Science shown chatting at Conference dinner

THE WORLD POW

IN PI



Pictures of the World Po onferenc
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Upper left is Power Confe Chairma
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Group at lower right are Fl Carlisle,
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ER CONFERENCE

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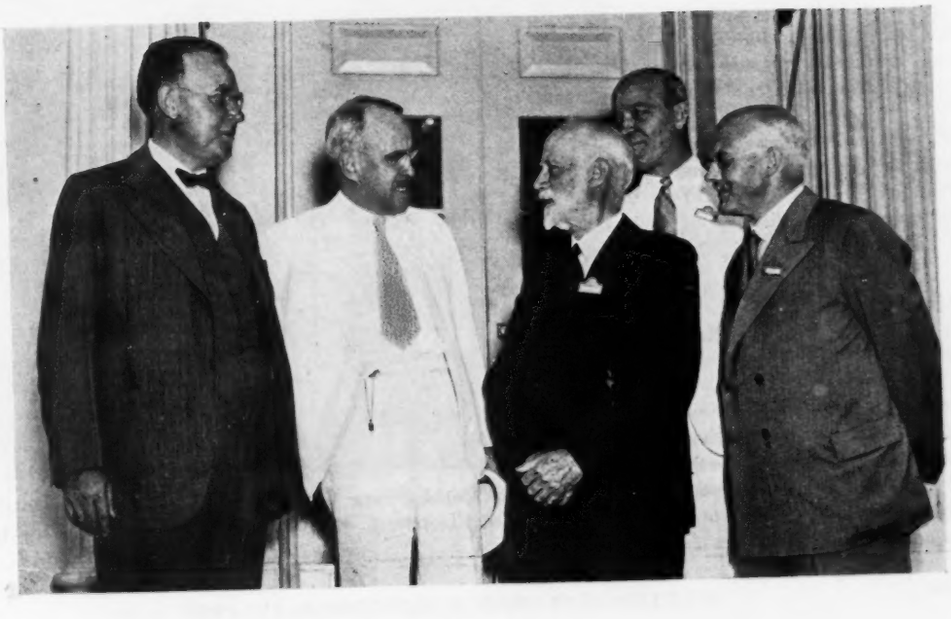

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Briefs Filed in Government's Pending Holding Company Case

Commission asks that Bond & Share be forced to register but company attacks entire act on three general constitutional grounds

"Your honor, we are just asking these Bond & Share boys to register with us. It wont hurt them to do that much, will it? Then, they can go ahead later if they care to and test the constitutionality of the Act if they want to"—such is the layman's summary of the contest now under way in the celebrated, "hand-picked" Electric Bond & Share Company case.

Briefs in the case were filed this week by Securities and Exchange Commission and Electric Bond & Share Company in the District Court of the United States for the Southern District of New York in preparation for oral arguments scheduled to begin before Judge Julian C. Mack on October 5.

Apparently, Electric Bond & Share Company, together with approximately ninety per cent of the utility companies in the United States, places little credence in the legal concepts of the present crop of government attorneys for all these companies have refused to register.

Furthermore, assurances regarding subsequent legal rights profferred by government counsel to the companies by way of the briefs seem in direct contradiction to the efforts which have been made by governmental officials to delay the orderly processes of other test cases and to expedite the "hand-picked" Bond & Share Company case (ELECTRICAL WORLD, June 27, 1936, page 4, *et seq.*).

The holding company brief, the combined action of twenty-two companies, consisting of 2,165 pages within seven bound volumes, is aimed at the entire Act, and denies its constitutionality on three general grounds: (1) the Act is not a regulation of interstate commerce or of the mails, but is an exercise of assumed power to legislate for the general welfare; (2) the Act invades the reserved powers of the States in violation of the Tenth Amendment; (3) the Act violates the due process clause of the Fifth Amendent to the Constitution.

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New Deal Reverses on Dam Purposes

"The President's assertion last Friday to the effect that, should the competitive influence of more federal dam projects be necessary to force further reductions of electric power rates upon private enterprise, then additional 'Meritorious,' dams 'can always be added,' is a clear-cut admission of New Deal guilt in the abuse of constitutional functions for the purpose of achieving unconstitutional objectives," said Philip H. Gadsden, Chairman of the Utility Executive Committee.

"From the lips of the President of the United States, at last we have an open and an official declaration that the real purpose of this hydro-electric program of the Government is not flood control, not navigation, not conservation, that the real purpose is to force further reduction of electric power rates.

"No other interpretation can be placed upon the President's words than that the recent official emphasis upon navigation, flood control and conservation are but a constitutional smoke screen cloaking the unconstitutional federal power program."

Makes no defense of yardstick

"It is significant that the President, while making his first campaign year defense of his yardstick theory failed to answer or explain the substantiated charge that electricity sold from these wasteful and unnecessary projects costs the people much more than the same energy if sold by the private utilities, any ostensible saving by way of lower rates being made up two-fold from taxes levied on everybody.

"He has served notice upon the millions of citizens whose savings are invested in operating utility companies that, unless rates are adjusted to suit the arbitrary views of Washington bureaucrats, then the properties in which they have invested their savings are going to be subjected to further destructive and unconstitutional federal competition," Mr. Gadsden said.

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Farewell Party for Conference Delegates

Visitors diplomatically point to harmony of foreign governments in power development by companies

Some 600 representatives of the power industry in metropolitan New York, gathered at a formal dinner Monday evening in New York City, heard distinguished Power Conference delegates thank the United States for its hospitality and learned from diplomatic phrases that private enterprise and governmental co-operation amicably discharge electric power obligations to social well-being in all of the major counties of the world.

Tendered as a farewell party by Consolidated Edison Company of New York the colorful assembly was a credit to the United States, to the power industry and to the host company.

Frank W. Smith, toastmaster, offered the toast to "The President of the United States." The toast to "Our Foreign Guests" was offered by Floyd L. Carlisle, chairman, Board of Trustees, Consolidated Edison. Responses were made in kind by Sir Harold Hartley of Great Britain, M. Charles Malegarie of

WORLD POWER GROUP AT WESTINGHOUSE

Delegates to World Power Conference gather in East Pittsburgh works of Westinghouse Electric & Manufacturing Company. This is the group on pre-convention Tour III

France, Professor Conrad Matschoss of Germany, Direktor W. Borgquist of Sweden, Directeur Emile Uytborck of Belgium, Ing. Giuseppe Cenzato of Italy, Dr. Masawo Kamo of Japan and the Right Honorable Viscount Falmouth of Great Britain.

Unprogrammed speaker was ex-Governor Alfred E. Smith, whose personality hurdled languages to win a tumultuous reception. The assembly terminated at an early hour that delegates might board special tour trains detained 20 minutes as a courtesy by the New York Central System.

Famous figures in the electrical world heard their power achievements lauded by the visitors and were reminded that the power industry of the world looks for leadership to the power industry of the United States.

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British Plan Reinforces Grid Supply System

The Central Electricity Board of Great Britain has received the Mid-East England (Alteration and Extension) Scheme, 1936, from the Electricity Commissioners. This new plan provides for the generating station of the Corporation of Grimsby becoming a selected station and also for the alteration of the routes of certain main transmission lines and for the location of a substation. By the original plan of March, 1929, the Grimsby station was scheduled to be worked under temporary arrangements between the owners and the board, but efficiency and economy of production have made the change desirable, it is said, to reinforce the grid supply.

Validity Vital Issue in T.V.A. Suit

Federal court in Tennessee calls for speedy hearing on constitutionality of whole T. V. A. Act — Authority gets $39,900,000 appropriation

Calling for a speedy hearing on the constitutionality of the Tennessee Valley Authority Act, Federal District Judge John J. Gore at a hearing held in Cookeville, Tenn., on September 11, announced that he could not determine jurisdiction until the constitutionality of the entire act had been determined. The judge made his unexpected statement at the close of a hearing on a motion by the Tennessee Valley Authority to dismiss a suit of nineteen power companies challenging the constitutionality of the Authority. T.V.A. contends that the Federal court in Tennessee is without jurisdiction.

As a result of Judge Gore's ruling attorneys for the Tennessee Valley Authority and those for the nineteen private utilities set to work to prepare arguments on the disputed constitutionality. He gave them less than two weeks in which to submit briefs to the court.

At the hearing John L. O'Brien of T.V.A. counsel told the court that the T.V.A. is distinctly and professedly a public agency of the Federal Government and that therefore Congress has the right to determine where it may be sued. Raymond T. Jackson, appearing for the power companies, said: "T.V.A. has come into Tennessee to construct power dams, transmission lines, and for business competition with private utilities without constitutional or congressional authority. It actively contemplates taking over the utility business of three major Tennessee cities, namely Memphis, Chattanooga and Knoxville, yet it pays no taxes and contends it is not under jurisdiction of Tennessee courts."

Memphis wins a point

The city of Memphis won its initial skirmish with the Memphis Power & Light Company in the T.V.A. injunction hearing before Chancellor Swepston last week when the court ordered the company to produce the form of the contract it contends the city will illegally enter into with the P.W.A. to finance construction of a municipal distribution system. No such contract exists, as all parties to the litigation agreed, but the power company is seeking to stop the negotiation of any such instrument in the future on the ground that the P.W.A. will require the unconstitutional surrender of the inherent state power to dictate terms of construction. Effect of the ruling means that the power company must now specifically set out what form it claims the proposed contract will take or admit that it has no knowledge of these details and therefore cannot lay a specific basis upon which to seek an injunction. However, the ruling covers merely one phase of the injunction suit.

T.V.A. secures $39,900,000 appropriation

A fund of $39,900,000 has been made available to the T.V.A. for its various construction projects, in accordance with the Deficiency Bill for the federal fiscal year 1936, recently approved by the President. The principal features of the program for which the appropriation has been made are: Pickwick Landing Dam and power development, $10,716,716; Guntersville Dam and power development, $8,006,372; McReynolds Dam (formerly the Chickamauga Dam), $5,563,000; Hiwassee Dam, $3,337,228; Wheeler Dam, $1,336,000; Norris Dam, $573,000; and Wilson Dam and reservoir, $39,000.

T.V.A. has awarded contract to Allis-Chalmers Manufacturing Company, Milwaukee, Wis., for two turbine units at price of $937,000. An award for quantity of aluminum conductor has been made to Aluminum Company of America, Inc., Pittsburgh, Pa., at $182,000.

PACIFIC GAS TO BUILD $1,800,000 TUNNEL

High maintenance and slides caused Pacific Gas & Electric to replace the 17-mile flume serving its Stanislaus plant with a new tunnel through solid rock. Following the contour of the canyon wall, the total length of the flume is 17 miles while the new bore, driven in three straight sections will be but 11 miles long

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American Steel Unit Expands

The program of expansion recently announced by C. A. Blackmar, president of the American Steel & Wire Company, will reopen the blast furnaces and coke ovens of the company at Duluth, Minn. Employment of at least 250 men in six or eight weeks in the furnaces and ovens, sold since 1930, is excepted.

N. Y. Utility Plans Three Model Houses

A unique project in model housing, with specifications to be based on the experience and opinion of 250,000 customers of the Niagara Hudson System, was announced recently by Alfred H. Schoellkopf, president of the Niagara Hudson Power Corporation.

The plan, which represents an unusual departure in ascertaining the ideal features for homes with electric service, includes a questionnaire to 250,000 customers of the Niagara Hudson System on their ideas for the designs and specifications of a model house, to be followed with the building by Niagara Hudson operating companies of three homes on the basis of these answers.

Construction of the homes, one each in Syracuse, Buffalo and Albany, will begin about next March 1. In the spring these homes will be open to the public and present the most advanced phases of home construction. They are expected to contain such features as air conditioning, insulation, indirect lighting and automatic heating.

Mr. Schoellkopf, who has just returned from abroad, where he visited some of the newest housing projects, said: "I was impressed in Europe with the large scale housing operations. There the emphasis, however, seemed to me to be on quantity of housing rather than quality. I believe that here we can combine both quantity and quality.

"One of the problems in housing development has been that specifications of the home often have not been based on a wide enough knowledge of what the average householder will want from the many points of view of modern life. Conveniences have been added to rather than designed into the home.

"Builders planning for the future must consider insulation, air conditioning, automatic heating and other rapidly developing improvements."

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Inspectors Discuss Electrical Code

Approximately 300 members of the International Association of Electrical Inspectors, Western section, attended a four-day convention at the Brown Hotel, Louisville, Ky., recently.

A number of experts in electrical inspection and kindred problems spoke at the opening sessions. Among the speakers was A. T. Babbitt, Lansing, Mich., chief inspector for Michigan, who discussed licensing systems. He recommended an electricians' licensing system under three classifications and the extension of wiring inspection to rural districts.

The national electrical code and the need for uniform safety laws were discussed by R. Bourke Corcoran, New York, representing the National Electrical Manufacturers Association.

New officers include S. H. Todd, Chicago, president; Clifford Anderson, Oklahoma City, and L. P. Dendel, Lansing, Mich., vice-presidents, and F. H. Moore, secretary-treasurer.

At the convention of the Eastern section meeting at the Hotel New Yorker, New York, last week, A. Lincoln Bush, advisory chairman, said the electrical code under which all inspectors work would probably undergo considerable revision. "The purpose of this convention," he said, "is to discuss new rules and regulations so that the electrical code under which we operate can be revised to fit the new appliances and reduce the hazard of accidents and property destruction."

Meetings

International Association of Electrical Inspectors—Southwestern section, Hotel Fresno, Fresno, Calif., September 21-24; Southern Section, Hotel Adolphus, Dallas, Tex., September 28-October 1.

Rocky Mountain Electrical Association—Annual convention, Santa Fe, N. M., September 21-23. George E. Lewis, managing director, Gas and Electric Building, Denver, Colo.

Association of Iron and Steel Engineers—Annual convention, Detroit, Mich., September 22-25, Brent Wiley, managing director, Empire Building, Pittsburgh, Pa.

National Electrical Wholesalers Association — Semi-annual convention, Hotel Statler, Buffalo, N. Y., September 28-30. E. Donald Tolles, managing director, 165 Broadway, N. Y.

Empire State Gas & Electric Association—Annual meeting, Saranac Inn, N. Y., October 1-2. C. H. B. Chapin, secretary, Grand Central Terminal, New York, N. Y.

Indiana Electric Association — Annual convention, French Lick, Ind., October 1-2. T. C. Polk, secretary-treasurer, 609 Traction Terminal Building, Indianapolis, Ind.

National Electrical Manufacturers Association—Netherland Plaza Hotel, Cincinnati, Ohio, October 4-10. W. J. Donald, managing director, 155 E. 44th Street, New York.

National Safety Congress and Exposition—Annual meeting, Atlantic City, N. J., October 5-9. Tom A. Burke, director of publicity, National Safety Council, 20 N. Wacker Drive, Chicago, Ill.

Electrochemical Society—Fall meeting, Niagara Falls, Ontario, October 7-10. Colin G. Fink, secretary, Columbia University, New York, N. Y.

American Welding Society — Annual meeting, Cleveland, Ohio, October 10-23.

National Electrical Contractors Association — Annual convention, Atlanta-Biltmore Hotel, Atlanta, Ga., October 12-14. L. W. Davis, secretary, 420 Lexington Ave., New York, N. Y.

American Physical Society — Annual meeting, New York, N. Y., October 29-31. W. L. Severinghaus, secretary, Columbia University, New York, N. Y.

Foreign Generating Capacity Increased

Soviet Russia plans large added generating capacity this year. While generating stations with a capacity of 467,000 kw. were constructed in 1935, the capacity of new plants to be established this year amounts to no less than 1,087,500 kw. The largest single addition will be a 100,000-kw. station at Stalinogorsk.

Extensive work will be undertaken this year on the Soviet's ambitious Sevan-Zanga chain of hydro stations in Armenia. The project provides for the construction of eight generating plants, with an aggregate capacity of 559,000 kw., along the Zanga River, which drops 3,080 ft. from its source at Lake Sevan to its junction with the Araks. The stations are to be so arranged that the diversion canals and storage reservoirs can also be used for irrigation work. When completed the group of stations will have an aggregate generating capacity greater than that of the Dnieper hydro plant.

Work is rapidly progressing on the construction of the Taraleah hydro power station on River Derwent in Tasmania by the Hydro-Electric Commission of Hobart. The initial plant will comprise three 20,000 hp. Pelton-type horizontal-shaft turbines coupled direct to 18,750-kva., three-phase alternators.

The attention of Italian industrialists has been centered of late on the possibilities of exploiting hydro-electric power in Abyssinia, and surveys are under way to ascertain the capacity of lakes and rivers in the territory. Reports are that conditions are favorable for hydro developments on the Nile affluents, on the Dinder, on the Abdara and on the Tacazzé.

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An Apology to the Coast

In our Six Months Survey of Appliance Sales, published September 12, the printer has perpetrated another atrocity. In the Summary on Page 58—the box display—Pacific Coast power companies are listed as having the "lowest average annual domestic consumption" and the "highest average domestic rate."

Obviously it should read—"*highest* average annual domestic consumption" and "*lowest* average domestic rate." But the proof came up with both marked "highest." The rate was corrected to read "lowest." But the correction was inserted in the wrong line—and doubled the offense.

The facts are correctly stated in the article (Page 59) but the error shines forth in bold face! Which recalls the old lament that whereas the doctor can bury his mistakes, the editor spreads his before the world. Our apologies to the Pacific Coast.

Advance Continues in Holiday Week

Energy production in central stations for electric light and power during the week ended September 12, which included Labor Day, declined by about 70,000,000 kw.-hr. compared with the preceding week to 2,028,583,000 kw.-hr., according to the Edison Electric Institute. Holidays normally bring a reduction, and since Labor Day came in the preceding week in 1935 the year's change must be evaluated on the basis of the fortnight. The increase amounts to 15.3 per cent. Thus the high rate of gain, which has been maintained since April, continues unabated and presages a winter peak that will surpass all precedents by a wide margin.

Regional changes for the two weeks' period indicate approximately the same gains over 1935 as in the recent past, rising to a maximum of 23.4 per cent in the South. The minimum was 9.7 per cent on the Pacific Coast.

Weekly Output, Millions of Kw.-Hr.

1936	1935	1934
Sept. 12...2,029	Sept. 14...1,828	Sept. 15...1,634
Sept. 5...2,099	Sept. 7...1,752	Sept. 8...1,565
Aug. 29...2,135	Aug. 31...1,810	Sept. 1...1,627
Aug. 22...2,125	Aug. 24...1,839	Aug. 25...1,648
Aug. 15...2,094	Aug. 17...1,833	Aug. 18...1,674
Aug. 8...2,079	Aug. 10...1,819	Aug. 11...1,659

Per Cent Change from Previous Year

	2 Weeks Sept. 12	Week Aug. 29
New England	+14.0	+13.7
Middle Atlantic	+12.8	+16.7
Central Industrial	+18.5	+21.5
West Central	+13.7	+18.5
Southern States	+23.4	+23.3
Rocky Mountain	+14.0	+13.8
Pacific Coast	+ 9.7	+11.4
United States	+15.3	+18.0

Four Transformers for Boulder Dam

Four additional power transformers have been purchased for the Boulder Dam power project from the Westinghouse Electric & Manufacturing Company. Designed to supply power to the Metropolitan Water District of Southern California, these transformers are rated at 55,000 kva. each, single phase, 60 cycles, water cooled, for stepping up from 16,500 volts to 230,000 volts. They will take power from generator units No. 5 and No. 6, step up the voltage to 230,000 and transmit the power at this voltage a distance of approximately 237 miles.

The total weight of each transformer after installation will be about 125 tons, and each will require floor space approximately 10½x12½ ft. The height from the floor to the high-voltage bushing will be nearly 30 ft.

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Nebraskan Sues to Stop Platte Valley Power Job

F. Q. Feltz of Keystone, Neb., has filed suit to enjoin further operation of the $9,700,000 Platte Valley Public Power and Irrigation District. Completion of the district's hydro plant is near.

Feltz contends that his land is being destroyed by diversion of water from North Platte River to South Platte River. The action, he said, was based on the Nebraska Supreme Court's recent ruling in the Tri-County power and irrigation project, in which the court ruled it illegal to divert water from the Platte River watershed for use in the Republican River or any other watershed.

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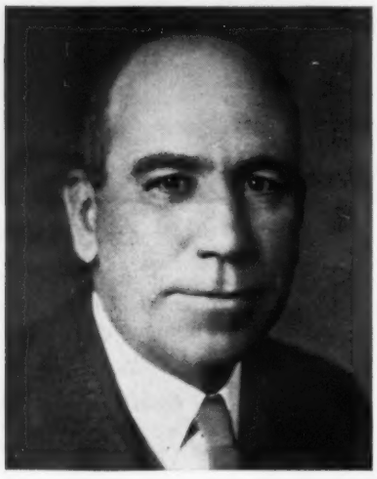
Wage Pact in Rhode Island

Wage increases ranging between 2 and 15 per cent have been agreed upon by the Narragansett Electric Company, Providence, R. I., and union labor representatives, following conferences lasting about two weeks. The original demand was for a flat increase of 12.5 per cent. Strike threats were rife during the negotiations, but public sentiment was strongly against a walkout and the amicable settlement of the matter, after thorough canvassing of working conditions and compensation on Rhode Island's largest operating property by representatives of the company and the employees, was widely welcomed.

News ABOUT PEOPLE

I. L. Craig New President of Pennsylvania Association

Ira L. Craig, assistant vice-president in charge of rates and standard practices, Philadelphia Electric Company, was elected president of the Pennsylvania Electric Association at the recent convention in Bedford Springs. Other officers elected follow: vice-presidents, D. A. Elias, Pennsylvania Power & Light Company; M. H. Parkinson, Penn Central Light & Power Company, and W. H. Swinney, West Penn Power Company.



Mr. Craig began his public utility career in 1908 with the Citizens Gas & Electric Company of Waterloo, Iowa, being transferred to the parent company, the American Gas Company, in 1913. Five years later he was advanced to the position of electrical engineer, and in 1921 he became rate engineer. In 1927 he was transferred to the promotion and sales department of the United Gas Improvement Company, Philadelphia, as rate engineer.

On July 1, 1928, he entered the employ of the Philadelphia Electric Company in charge of the rate and standard practice department, which position he now holds. He has been active in the affairs of the Pennsylvania Electric Association for the past ten years, as treasurer, member of the executive committee, and as vice-president.

Mr. Craig was born in Dallas County, Iowa, and was graduated from the Iowa State Teachers College and later from Cornell University.

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▶ WILLIAM G. MERVINE has resigned as chief mechanical engineer of the Federal Power Commission to join the engineering staff of the American Gas & Electric Company in New York City. Mr. Mervine returns to the utility field after two and one-half years with the commission. He was formerly with U.G.I.

▶ WALKER D. HANNA, investment banker of Burlington, Iowa, has become associated with the Burlington Instrument Corporation, manufacturer of voltage regulators, and has been elected president.

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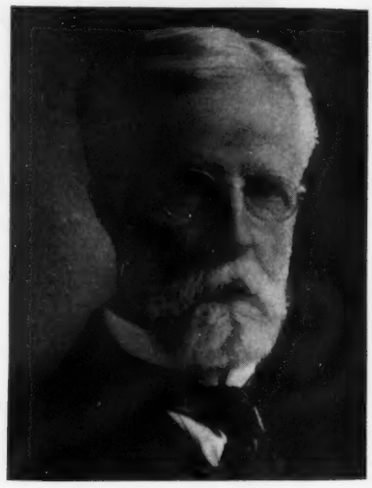
Dr. L. deVerebely, Hungarian Technical University, returned to the scene of his apprenticeship 30 years ago when he visited the East Pittsburgh plant of Westinghouse on World Power Conference Tour III. Professor deVerebely worked with George Westinghouse and Dr. Lamme, later becoming chief engineer for Italian Westinghouse Company. Professor deVerebely stated that as far as he knows he is the only European who has a Westinghouse training course diploma.

L. J. Nichols Completes Seventy Years of Service

Lester J. Nichols, secretary of the Malleable Iron Fittings Company, Branford, Conn., has recently completed seventy years of continuous service with that organization. Joining the company as shipping clerk in 1866, at the age of 17, Mr. Nichols has had the privilege of assisting in and watching its growth from a foundry, with a capacity of less than one ton of castings a day, to a group of foundries with a capacity of 6,000 tons of pipe fittings, 7,500 tons of malleable castings and 5,000 tons of steel castings a year. At the annual meeting of the board of directors in June, 1901, he was elected secretary, the position he holds at the present time.



In recognition of such an unusually long term of employment, officials of the company tendered a dinner in Mr. Nichols' honor. Directors, department heads, office force and factory foremen gathered on this occasion to extend their congratulations to Mr. Nichols. Sixteen other guests of honor at the dinner were those who have a record of continuous employment with the company for forty years or more. Counting Mr. Nichols' 70 years of service, these 17 people have served the company for the astounding total of 775 years.

Puget Sound Utility Announces Promotions

A. L. Pollard, since 1930 superintendent of steam heat for the Puget Sound Power & Light Company, Seattle, has been named general superintendent of light and power. In his new position Mr. Pollard will supervise the work of division superintendents and will coordinate construction, maintenance and operating practice in all districts. His headquarters are in Seattle.

Mr. Pollard entered the employ of Stone & Webster as a student engineer for the Houghton County Electric Company in 1915. His itinerary in the system has included Pawtucket, R. I.; Halifax, Nova Scotia; El Paso, Tex.; Tampa, Fla.; Saskatoon, Saskatchewan, and Seattle.

E. R. Nigh, who for the past seven years has been superintendent of light and power in the Everett district, has been promoted to the position of superintendent of light and power and steam heat, central division, to succeed Mr. Pollard. He started with the utility in 1908. After the World War he was made superintendent of light and power in Bremerton, whence he went to Everett.

J. Harvey Leach has been named advertising director, succeeding L. A. Williams, who recently became district manager with headquarters in Everett. Mr. Leach has been editor of the company's monthly publication, Puget Sound News.

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▶ CYRIL NAST, for many years associated with the advertising activities of the Consolidated Edison Company and its electric companies and a prominent figure in advertising circles, retired recently after thirty-one years of service with the company. At the time of his retirement he was art director for the gas and electric companies affiliated with Consolidated Edison.

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Smith Heads Utility Section American Bar Association

Elmer A. Smith, general attorney for the Illinois Central Railroad, Chicago, was elected chairman of the public utility law section of the American Bar Association at the recent convention of that body in Boston, succeeding George R. Grant.

Mr. Smith is a native of North Dakota, and was educated at the University of Colorado, attending law school in Chicago. He has been connected with the Illinois Central for about 25 years. R. B. Garver, Kansas City, Mo., was elected vice-chairman; R. J. Smith, New York, secretary, and C. M. Uptegraff, Iowa City, Ia., treasurer of the section.

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▶ CHARLES H. SCHWANER of Scottsbluff, Neb., has been elected secretary and treasurer of the Savannah Electric & Power Company, Savannah, Ga. He succeeds William L. Breslin, who has joined the Western Public Service Company at Scottsbluff. Both properties are operated by Stone & Webster.

▶ G. I. WRIGHT, formerly chief electrical engineer for the Reading Company and the Central Railroad of New Jersey, has been appointed manager of the transportation department of the Westinghouse Electric & Manufacturing Company.

▶ HUGH A. CALDERWOOD of Pittsburgh, Pa., formerly with the National Electrical Products Company, and later with the government on electrification work, has been appointed factory and sales manager for the Armstrong & White Company, Pittsburgh, manufacturer and distributor of electrical supplies.

▶ FRANK CORDES, senior vice-president of the Blaw-Knox Company, has been elected president to fill the vacancy caused by the death of Irvin F. Lehman. Chester H. Lehman was elected a senior vice-president and George L. Dumbauld was elected a vice-president in addition to the position of treasurer which he now holds.

▶ G. C. HARVEY, formerly engineer in the factory methods and cost reduction department, General Electric Company, Schenectady, N. Y., has been transferred to the small motor section at Fort Wayne, Ind., as motor designer.

UTILITY QUARTET CONGRATULATED

Ninety-five man-years of service in the New England Power Association system were signalized at the Boston headquarters recently when President Carl S. Herrmann (3) presented a 20-year pin to Edward W. Dillard, electrical engineer (5), and 25-year pins to Arthur E. Pope, vice-president (1); Alvah M. Smith, chief right-of-way engineer (2), and Clyde A. Booker, transmission line engineer (4). The directors' room at "89 Broad" formed the setting of the occasion, which emphasized the part played by engineers of relative youthfulness in developing the property from the small beginnings of a quarter-century ago to its present far-flung importance.

Manufacturing AND MARKETS

Kelvinator Plans to Spend $600,000

A plant expansion program to make possible an increase in capacity of at least 25 per cent has been started by Kelvinator Corporation. Plans call for construction of two new buildings and involve an expenditure of $600,000, it was stated by George W. Mason, president and chairman of the board.

The new additions will provide additional space for the manufacture of domestic refrigeration units and air conditioning equipment in order to meet a steadily increasing demand. Announcing the plans for the addition, Mr. Mason said: "The capacity of the plant has been taxed by constantly increasing volume of electric refrigeration units. There has been a decided increase in the demand for air conditioning equipment and this demand will continue to increase for several years to come.

"To level off peaks," Mr. Mason continued, "Kelvinator has added additional products including electric ranges, oil burners and hot water heaters, and the development of these products has been taken into consideration in the expansion plans that are now being started."

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Westinghouse Increases Wage Bonus for August

Westinghouse Electric & Manufacturing Company recently announced a bonus to its employees of 14 per cent of their regular wages for August. The bonus, based on earnings, amounted to 13 per cent in July, 11 per cent for June and 9 per cent in May, when the plan was inaugurated.

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Industrial Progress Exhibit To Be Held in Chicago

The fourth annual Industrial Progress Exhibit sponsored by the Electric Association for the Electrical Maintenance Engineers of Chicago will be held October 21-23 in the Chicago Lighting Institute. The exhibit will open on Wednesday with a dinner for the exhibitors and E.M.E. members and guests and will continue through the following two days from 10 A.M. to 10 P.M.

This display will show the newest equipment and latest developments made by the manufacturer members of the Electric Association. The exceptional interest shown, indicates that the exhibit will surpass that of last year at which 78 manufacturers displayed their equipment to over 3,000 electrical and mechanical maintenance men, operating and production engineers.

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Lincoln Moves to Larger Quarters

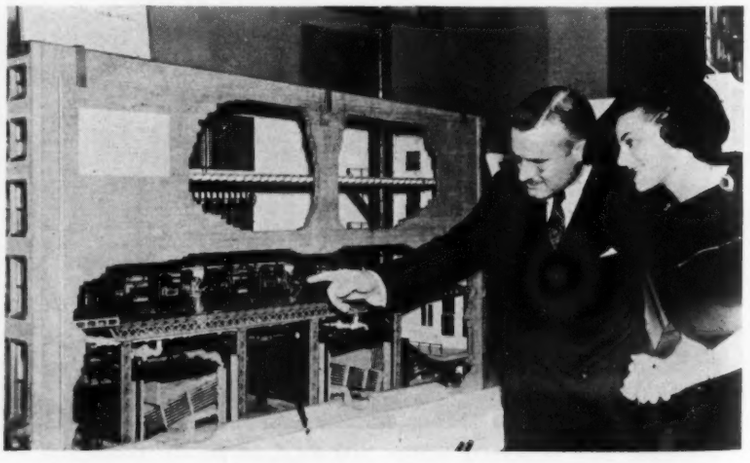
Lincoln Electric Company, Cleveland, Ohio, announces the change of its San Francisco office from 894 Folsom Street to 866 Folsom Street. The new quarters have 50 per cent greater space than at the previous location. This combined sales office and warehouse is housed in a 25x140-ft. portion of new building of modern design and is conveniently located near the San Francisco approach to the Bay Bridge.

St. Louis Companies Lease More Space

Three St. Louis electrical companies have recently leased additional space to meet the increasing demand on their facilities. Westinghouse Electric Supply Company has taken a ten-year lease on a six-story brick building on Spruce Street owned by Washington University. The company plans to occupy the new quarters about December 1. In the meantime the owner will expend a large sum for the necessary alterations.

Emerson Electric Manufacturing Company recently signed a ten-year lease on 34,500 sq.ft. of floor space in the two-story brick building at Nineteenth Street and Washington Avenue. When necessary alterations and improvements are completed the company plans to move its general offices from the seven-story factory building at Twenty-first Street and Washington Avenue so that that building may be given over entirely to manufacturing purposes. Both floors will be remodeled at a large outlay.

Gamp Electric Company has leased a two-story commercial building at Locust



One of the most popular of the more than a hundred exhibits at the National Electrical and Radio Exposition in New York, is the exhibit of the Edison Foundation. R. C. Estell, regional director of the Thomas A. Edison Foundation, shows replicas of the original Edison Pearl Street Station and of the earliest Edison dynamos

Street for a term of five years. It will use the first floor for sales and display rooms and second floor as offices.

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General Electric Trains Personnel

Fifty-five colleges and universities all over the country are represented by the one hundred young men who have been selected by the General Electric Company to enter its business training course this year. Colleges as far west as Montana State and the University of Oklahoma contribute graduates, who plan to spend a three-year business interneship with General Electric.

The subjects offered the students range from elementary accounting up to cost accounting and industrial analysis and control. In addition, a course in business law is given. These studies are designed to help the student bridge the gap between theory and practice and to prepare him to assume the more important duties that are his when he finishes the business training course.

The young men who go to Schenectady and to Bridgeport to take this course have been chosen because in college they were outstanding in intelligence, personality and leadership. About half of the incoming 1936 class, for instance, are Phi Beta Kappa men, or its equivalent. All of the group stood out in their class as men of more than usual ability.

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Lincoln Gets Rights on German Oxygen Machine

Negotiations with the Messer Company, Frankfort-on-Main, Germany, for representation in the United States by the Lincoln Electric Company, Cleveland, Ohio, are announced as completed by J. F. Lincoln, president and general manager. The Messer Company is the designer and patentee of a low-priced automatic oxygen machine whereby users of oxygen for cutting and welding by the acetylene process can produce oxygen in their own plants at low cost and thus reduce the cost of doing this work to a point much lower than heretofore. Mr. Lincoln reports that his company will handle all negotiations for use of any equipment sold or manufactured under the Messer patents in this country.

New York Metal Prices

	Sept. 9, 1936 Cents per Pound	Sept. 16, 1936 Cents per Pound
Copper electrolytic	9.75*	9.75*
Lead, Am. S. & R. price	4.60	4.60
Antimony	11.625	11.5
Nickel ingot	35.00	35.00
Zinc spot	5.225	4.85
Tin Straits	44.625	44.875
Aluminum, 99 per cent	19—21	19—21

*Delivered Connecticut Valley.

Field Reports on Business

Reports to ELECTRICAL WORLD *from the field indicate a continuation of the substantial gains made this year in virtually all lines. Assuming a highly optimistic attitude, manufacturers of various electrical products are not looking for any let-down in expanding activities. Reports from steel, automobile and railroad fields indicate the growing demand for replacement of worn out equipment and construction of additional equipment to prepare for further business gains.*

NEW ENGLAND

Allis-Chalmers has received an order from the Boston Edison Company for 3—10,000 kva. phase regulating and voltage-ratio transformers to be used in connection with a New England Power Company tie-in. Other power companies in this area are buying electrical supplies in good volume. One prominent distributor reports a steady demand for pole-line equipment; poles and line hardware sales are up. In the southern area, the Hartford Electric Light Company plans to spend about $200,000 in sub-station improvements at South Meadow, Weathersfield and Pearl Street district, including flood damage prevention work.

Motor sales are encouraging; small D.C. motor-generator sets were recently purchased together with panel board layouts for a power plant; switch and control apparatus sales are strong. Electric furnace manufacturers report considerable interest; orders for small experimental purpose heat treating 10 kw. furnaces from several institutions have been received by a well-known manufacturer; other interesting orders reported include a new 95-kw. strip annealing electric furnace for a wire company and a similar type 72-kw. furnace for a prominent South Boston manufacturing plant. Arc welding equipment is active; small units rated 100 to 150 amperes are attracting interest; one company delivered a 150-amp unit this week for special tube welding.

Special electrical apparatus commands attention and buying is notably strong in certain lines.

Merchandising is active; in a recent 15 weeks' drive, 472 electric ranges were sold by the Worcester Electric Light Company; in the southern Vermont area, range and refrigerator sales up to last week were 529 and 2,349 respectively, a note-worthy increase over the volumes reported for last year.

CHICAGO

Additions to industrial payrolls and a rush by owners and prospective builders to complete rehabilitation and construction before the start of cold weather, featured Chicago business last week. A marked pick-up in employment in the ranks of skilled labor has resulted from expanding activity in residental building.

Although business lost a little more ground in the recovery march, the moderateness of the reaction was reassuring. For the next few weeks the trend is expected to observe the decrease of the last three. However, if the decline to be experienced is no more destructive than that which has been felt, the occasion will be designated as no more than a breathing spell.

Inquiries made of manufacturers of diversified electrical products, reveal an exceptionally optimistic attitude. With the substantial gains registered in virtually all lines, the number of inquiries being made and future orders booked, indications are for a continuation of the increasingly good business that has marked the year so far. Appliances—large and small—are selling remarkably well. Radio manufacturers are having an excellent year as orders continue to mount. Wire and cable sales show no sign of a let-down. There is a steady demand for motors, control apparatus and switches. Electric tool sales top last year by a wide margin.

NEW YORK

"This is the first year since the depression in which general business has improved for three consecutive quarters. The steady course of improvement of the second quarter over the first and the third quarter above the second has prevailed in all the major divisions of our economic life except agriculture," said Colonel Leonard P. Ayres, vice-president of the Cleveland Trust Company, in his monthly business review issued on Monday. The political campaign seems to be having no important effect in the course of business activity.

Steel operations this week are scheduled at 72.5 per cent of capacity, it was announced by the American Iron and Steel Institute, compared with 48.3 per cent in the corresponding week of last year. Production of electrical energy during the week of September 12 was 2,028,583,000 kw.-hr. As this period included Labor Day while the corresponding week last year did not comparison must embrace both weeks. This comparison shows an increase of 15.3 per cent over 1935.

Retailers, expecting that the Christmas holiday period will be one of the best since 1930 or 1929, are currently rounding out their commitments on a number of lines to avoid possible shortages and to insure against later delivery delays.

PACIFIC COAST

Pacific Gas & Electric Company's recent refrigerator campaign converted an off peak month into the high spot of the year and topped June sales by 13 per cent. The campaign itself is considered to have accomplished a 21 per cent sales increase and a two-month electric range co-operative effort is ready for release.

Power apparatus and electrical machinery manufacturers report their coast branches as working at capacity and full time with no stocks accumulated to cope with a steady call for rather low ratings featuring small lateral line equipment, a surprisingly maintained pumping demand and a marked increase in industrial motors and controls.

A vehicular tunnel spectacularly lighted is to be constructed between Coronado and San Diego. Los Angeles Railway expects the delivery of 60 streamlined electric cars costing $1,000,000. Wholesalers report a shifting of standardization toward such new developments as dust-tight, explosion-proof and splash-proof wiring material and motors.

Utility Stocks Yield Ground

Following the general market trend, prices of electric light and power stocks moved downward this week. "Electrical World" index, 38.7; last week, 39.2

Utilities Asks S. E. C. to Exempt Notes

Public Service Company of New Hampshire, Manchester, a subsidiary of the New England Public Service Company, has asked the S.E.C. for exemption from the provisions of the Public Utility Act of 1935 for an issue of not more than $3,000,000 of promissory notes to be sold at private sale to not more than six banks. A hearing was called for September 26. Of the proceeds $2,225,000 would be applied to the purchase of all of the hydro-electric development of Amoskeag Manufacturing Company from Amoskeag Industries, Inc., of Manchester; $100,000 would be invested in the equity stock of Amoskeag Industries, Inc., and the remainder used to make additions to the properties, plant and equipment of the applicant, including the erection of a dam at Eastman Falls on the Pemigewasset River.

Announcement was made this week that the defunct Amoskeag Manufacturing Company's Manchester textile mill has become the property of a group of Manchester citizens for $5,000,000. Arthur Black, federal bankruptcy referee, approved the sale after creditors and bondholders recorded themselves in favor of the plant's purchase by Amoskeag Industries, Inc. Of the $5,000,000 purchase price for the mills, the Public Service Company of New Hampshire has agreed to pay $2,225,000 for the water-power rights. The company also contributed $100,000 of the first payment made by Amoskeag Industries (ELECTRICAL WORLD, September 5, page 7).

Twin State Gas & Electric Company of Rutland, Vt., also a subsidiary of the New England Public Service Company, has asked exemption for issue, without public offering, of $2,205,000 of promissory notes—a hearing was also called for September 26; $2,005,000 were described as credit agreement notes and $200,000 as affiliate notes. Proceeds would be used in connection with the making of additions to the properties of the applicant.

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Mt. Horeb Electric Co. Purchases Utility

The Wisconsin Public Service Commission recently consented to the purchase, for $65,000, of the Commonwealth Telephone Company's electric utility operating in Mt. Horeb by the Mt. Horeb Electric Company, owned by the Wisconsin Power & Light Company. The sale is not to interfere with acquisition of the utility by the village, and consent of the commission must be secured to any proposed major changes by the new owner. An appeal by the Commonwealth Company from an order of the commission fixing the purchase price of the utility at $60,000 is still pending in the Dane County Circuit Court.

Stone & Webster Officials Sued

Charges that officials of Stone & Webster, Inc., wasted the company's assets in "pegging the market" to maintain the price of the stock and in lobbying against the Public Utility Act, were made last week in Supreme Court in New York in a stockholder's suit against the company and sixteen individual officers and directors. The plaintiff, Sophia Markowitz, asked an accounting for more than $500,000 allegedly wasted.

She charged that the defendants had spent $18,000 of the corporation's money in lobbying against the holding company provisions of the Public Utility Act "to protect sources of inside profit."

In a supplementary complaint the plaintiff charged the company bought 15,000 shares of its stock and resold it at cost to George O. Muhlfeld, president. Mr. Muhlfeld has paid only $75,000, of the $562,239 price, she said, the remainder having been gradually deferred and the interest rate cut by a series of agreements made between 1931 and February, 1936.

The company pointed out that the plaintiff held only two shares and maintained that the Muhlfeld transaction was reported to the Federal Trade Commission in 1934 and to the S.E.C. this year The defendants deny the charges completely, according to Mudge, Stern, Williams & Tucker, their attorneys.

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Rochester Gas Issue

Rochester Gas & Electric Corporation, Rochester, N. Y., has filed a registration statement under the Securities Act of 1933 covering 40,000 shares of $100 par value, Series E, 5 per cent cumulative preferred stock. Net proceeds together with other funds are to be used to redeem 40,000 shares of outstanding Series B 7 per cent cumulative preferred stock at $105 a share.

Utility Earnings Reports

Company	Net Income 1936	Net Income 1935
American & Foreign Power Twelve months, June 30	$3,476,161	$3,538,005
American Gas & Electric Twelve months, July 31..	9,173,184	7,994,927
American Water Works & Elec. Twelve months, July 31..	3,187,016	1,601,778
Baton Rouge Electric Twelve months, July 31..	177,342	106,166
Central Arizona Lt & Pwr. Twelve months, July 31..	473,820	350,863
Central Illinois Light Twelve months, July 31..	1,373,002	1,357,372
Continental Gas & Elec. Twelve months, July 31..	2,407,195	1,135,926
El Paso Electric Twelve months, July 31..	93,302	108,277
Florida Power & Light Twelve months, July 31..	248,608*	104,655*
Gulf States Utilities Twelve months, July 31..	257,756	194,434
Iowa Public Service Twelve months, July 31..	$261,349	$123,100
Lake Superior District Pwr. Six months, June 30....	101,107	50,671
Mississippi Power Twelve months, July 31..	195,119	108,442
Montana Power Twelve months, July 31..	1,900,384	1,488,759
Puget Sound Power & Light Twelve months, July 31..	543,592*	1,404,925*
Savannah Elec. & Pwr. Twelve months, July 31..	67,270	45,799
Southern Indiana Gas & Elec. Twelve months, July 31..	337,102	175,003
Virginia Electric & Power Twelve months, July 31..	1,921,428	1,557,469
Washington Water Power Twelve months, July 31..	2,092,792	1,275,752

*Deficit.

New EQUIPMENT

LIGHTING FIXTURE SWITCH—New 10-amp., 125-volt fixture and canopy switches are said to be capable of controlling 1,000-watt, gas-filled lamps and yet are small enough to fit into the conduit box or the canopy of the fixture. Switches measure 1¾ in. in diameter, are ⅜ in. thick, are furnished with three different stem lengths and with a link so that they may be used in chain-type fixtures. They are marketed by McGill Manufacturing Company, Valparaiso, Ind., which also announces extension arms for use on its switches where the fixtures have large reflectors and it is necessary to extend the control cord from outside the rim of the canopy.

COMMERCIAL LIGHTING FIXTURES — Two commercial lighting fixtures producing opposite effects are announced by the F. W. Wakefield Brass Company, Vermilion, Ohio. One consists primarily of an aluminized bowl reflector fitted with louvred open bottom, providing a combination of localized direct downward light and indirect upward illumination. Known as the "Catchon Downlight," this unit is rated at 200 watts and may be screwed into any convenient light socket. The other, a box-shaped "cove" reflector, is rated at 300 to 500 watts and is designed for use on a high counter or shelving, to supplement ceiling illumination.

CONDUIT-BOX CONNECTOR—National Electric Products Corporation of Pittsburgh, Pa., has announced a conduit-box connector with which, it is claimed, rigid conduit may be connected to a box as firmly and as permanently as though the connection were welded. It consists of three parts—a hub with one end threaded to fit on the conduit, a telescoping flange sleeve with two holes to take care of varying box wall thicknesses and a "Wedgscru," which, with the flange, draws the hub against the box. A screwdriver is the only tool necessary.

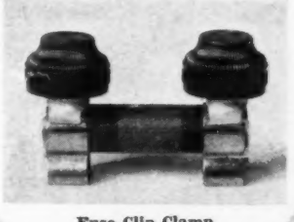
HOME AIR CONDITIONER—Year 'round air conditioning is furnished by home conditioners announced by Carrier Engineering Corporation, Newark, N. J. Units are designed for use with installed steam or hot water boilers but are also adaptable to houses with hot air heating. Two sizes are available, for large and small homes. Various automatic controls are planned to assure continuous comfort and economy of operation.

FUSE CLIP CLAMP—Said to be particularly useful on heavily loaded switches or fuse clips where fuse replacement is frequent, new fuse clip clamps are offered by the Ideal Commutator Dresser Company, Sycamore, Ill. Turning the knob on these clamps forces a steel clamping ring over the outside of the jaws, exerting pressure against the fuse or switch clips. A deep insulating skirt is designed to shield against live contacts, and it is claimed that the clamps prevent burning and pitting of fuses and clips due to poor contacts.

PHASE ROTATION INDICATOR—Small 2½-in. phase rotation indicators weighing less than 13 oz. have been announced by Ferranti Electric, Inc., New York, N. Y. These instruments may be used on voltages of from 110 to 550 volts, 25 to 125 cycles. Portable models are fitted with three 30-in. leads having crocodile clips of different colors. The indicator consists of a small three-phase induction motor mounted in a bakelite case and fitted with an aluminum disc that instantly indicates the direction of rotation on a three-phase supply.

LIGHT SELECTION RECORDER—What constitutes optimum illumination for the individual is indicated by a light selection recorder developed by the incandescent lamp department of the General Electric Company, Cleveland, Ohio. A person seats himself in the armchair and selects from the adjustable lighting unit the amount of light he finds most comfortable for reading. The recorder presents him with a card on which is stamped the number of foot-candles he prefers. Control box and lighting unit may also be used in making similar recordings for drafting tables and with Sight-Light demonstrators.

VOLTAGE REGULATORS — Quick response, maximum reliability and minimum voltage change are claimed for voltage regulators announced by Burlington Instrument Corporation, Burlington, Iowa. This vibrating contact type regulator depends on alternating current only for the regulation impulse actuating the core of the main a.c. coil. This, in turn, through the main contacts, energizes the relay coils operating the relay contacts which make and break a "short" across a portion of the exciter field rheostat. Thus a variable speed of vibration—adjustable over a wide range—is produced. Welded steel framework, main contacts of a platinum-iridium alloy and other contacts of silver or tungsten are construction features.



Fuse Clip Clamp

Home Air Conditioner

Light Selection Recorder

Phase Rotation Indicator

TECHNICAL BULLETINS

AMMONIA COMPRESSORS—Vertical, single-acting, inclosed ammonia compressors are described in bulletin 36146 of the York Ice Machinery Corporation, York, Pa. Construction features of this line, as well as the models themselves, are pictured in the 16-page booklet. General dimensions of the compressors are included.

COMMUNICATION AND CONTROL CABLES—"Laytex," the New Dielectric in Communication and Control Cables," is the title of a manual issued by United States Rubber Products, Inc., 1790 Broadway, New York, N. Y. Graphs and tables show the physical and electrical characteristics of Laytex. Detailed information is given indicating the specifications and proper uses of this cable, which includes insulated communication cables, supervisory control cables, fire alarm and police signal cables, telephone cable and various types of telephone wires.

UNIT HEATERS—Bulletin 46-E-1 of the Carrier Engineering Corporation, 850 Frelinghuysen Avenue, Newark, N. J., illustrates and describes this line of Kroy type unit heaters, their application, dimensions, ratings and specifications.

PRINTING-PRESS CONTROLLERS—A.c. preset-speed printing press controllers are discussed in bulletin GEA-962C of the General Electric Company, Schenectady, N. Y. Construction features are pictured and described and specifications are listed for this line of controllers. Information which aids in selecting the proper controller for various service requirements is also given in the folder.

Farm Groups Assist Rural Co-operatives

In the first voluntary collaboration of state-wide general farm organizations yet recorded in the United States to promote and assist rural electric co-operatives, the Virginia State Grange and the Virginia Farm Bureau have announced the organization of the Virginia Farm Power Board. The new organization will act as representative of Virginia farmers and rural people in the promotion of rural services.

The Farm Bureau and the Grange are the only two national farm organizations in the Commonwealth and, together, their membership blankets the entire state and consists of more than 10,000 of the leading farmers of Virginia.

The object of the educational program to be carried on by the board will be the ascertaining of prospective projects by preliminary work and project surveys necessary to determine whether the projects may be developed into a practical and successful undertaking. In addition, the board will make information available to farmers and other rural people on the uses of electrical appliances and equipment in their homes and on their farms.

When a project definitely has shown itself to be practical, the board will proceed with organization, securing of a charter, preparation of engineering data and all other necessary things to be done in preparing the application for a loan from the R.E.A.

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Utility Directors Restore Wage Cuts

Restoration of pay to the level of 1932, before the first cut of 6 per cent was effected, for all employees of the Public Service Corporation of New Jersey, Public Service Electric & Gas Company, Public Service Co-ordinated Transport as well as the Public Service Interstate Transportation Company, with the exception of higher paid officials, was voted this week by the several boards of directors. The higher pay schedule becomes effective October 1.

The action affects close to 20,000 employees. The official statement said that the increase was "substantially equivalent to 10 per cent."

Plan to restore the pay level was started several weeks ago by Thomas N. McCarter, president, the statement said, "in accordance with his oft-expressed policy of giving consideration to employees as well as to stockholders and customers as the earnings of the operating companies and the parent corporation justified such action."

Sales OPPORTUNITIES

SIOUX CITY, IOWA—Iowa Public Service Company, Fort Dodge, Iowa, plans extensions in transmission lines in Sioux and Plymouth Counties for rural electrification, totaling about 55 miles, with power substation facilities. Cost close to $200,000. Application has been made for permission.

LAS VEGAS, NEV.—Plans city-owned electrical distributing system, with power substation and service facilities. Cost about $250,000. Project has been approved by PWA, which will provide Federal grant for $112,000 of fund, remainder to be secured through bond issue. Proposed to begin work soon.

MEMPHIS, TENN.—Is acquiring tract of about 15 acres of land near southern city limits for large outdoor-type power substation and switching station for proposed municipal distributing system. Station will be connected with high-tension lines of TVA, which will furnish power supply from Muscle Shoals and Pickwick Dam hydroelectric power plants. Cost about $300,000. A similar power substation is proposed near northern city limits, likewise connecting with lines of TVA, for power service in that area of municipality.

ROME, GA.—Tubize Chatillon Corporation, 2 Park Avenue, New York, N. Y., plans extensions in steam-electric generating station in connection with expansion at viscose rayon mill, Rome, with installation of 2500-kw. turbo-generator unit and accessories, high-pressure boiler, pumps and complete auxiliary equipment, transformers, switchboard panels, etc. Motors and controls, regulators, conveyors and other equipment will be installed in new one and three-story mill units, designed to increase capacity about 50 per cent. Bids will be asked soon on general erection contract. Cost close to $2,500,000. Robert & Company, Inc., Bona-Allen Building, Atlanta, Ga., is consulting engineer.

DENVER, COLO.—Bureau of Reclamation, Denver, receives bids until September 22 for three 200 kva., single-phase, 60-cycle, 33,000/2400 volt transformers with accessories, for power substation, Heart Mountain Division, Shoshone Project, Wyo. (Specifications 833-D).

MARYSVILLE, OHIO — Union Rural Electric Co-operative, Inc., Marysville, recently organized, plans transmission and distributing lines in parts of Marion, Delaware and Logan Counties for rural electrification, totaling about 280 miles, with power substations and service facilities. A series of six main lines will be built, radiating from Marysville. Fund of $336,000 has been secured through Federal aid. Work is scheduled to begin soon.

WAVERLY, VA. — Tidewater Electric Company, affiliated with Virginia East Coast Utilities Company, Waverly, plans transmission and distributing lines for rural electrification in parts of Gloucester, Mathews, Lancaster, Northumberland and neighboring counties, totaling close to 60 miles, with power substation and service facilities. Cost close to $100,000. Company has secured permission to dispose of stock and arrange financing.

WASHINGTON, D. C.—Bureau of Yards and Docks, Navy Department, has postponed closing of bids from September 30 to November 25 for new floating drydock at Pearl Harbor, Hawaii, 1,016 feet long and 165 feet wide, to include complete power substation and power feeders, switchgear, transformers and accessories, heavy-duty motors and controls, electric cranes, hoists and other equipment (Specifications 8228). (Cost estimated at $10,000,000, and appropriations authorized in that amount.)

LOS ANGELES, CALIF.—Bendix Aviation Corporation, 105 West Adams Street, Chicago, Ill., plans installation of motors and controls, conveyors, transformers and accessories, electric hoists and other equipment in new multi-unit automotive and aircraft equipment manufacturing plant at Los Angeles, where site is being selected. Cost over $800,000.

COLUMBUS, NEB.—Loup River Public Power District, Harold Kramer, 2307 Thirteenth Street, Columbus, secretary, receives bids until September 22 for construction of 34.5 kv. three-phase transmission line between hydroelectric generating stations at Monroe and Columbus, respectively, about 15 miles, with alternate bids on aluminum and copper cable; also for two-wire supervisory telephone line on same poles.

GLASGOW, KY.—Plans city-owned electric power plant and electrical distribution system. Cost about $200,000. Election will be held soon to approve bond issue in that amount.

SEARCHLIGHT, NEV.—Has plans maturing for 600,000-volt transmission line for power supply for municipality, including power substation and switching station at town limits. Cost estimated at $188,000. Financing has been arranged through Federal aid. Work is scheduled to begin soon.

RICHMOND, VA.—DuPont Rayon Company, Ampthill, near Richmond, plans installation of motors and controls, conveyors, regulators and other equipment in new multi-story additions to local mill, to be used for cellulose film manufacture. Capacity of power plant will be increased, with installation of additional equipment. Entire project will cost over $1,000,000 and is scheduled for completion in 1937. Company is a subsidiary of E. I. duPont deNemours & Company, Wilmington, Del.

JACKSON, TENN. — Plans city-owned electrical distributing system, with transmission line for connection with high-tension lines of TVA, including power substation at city limits and other step-down and operating facilities. Estimated cost $575,000. Financing is being arranged through Federal aid. Freeland, Roberts & Company, Nashville, Tenn., are consulting engineers.

SEATTLE, WASH.—Purchasing Agent, Department of Interior, Federal Office Building, receives bids until September 30 for water wheel-generator unit, exciter, switchboard and auxiliary equipment (Proposal 01016).